BUFFALO NARROWS PLANNING STUDY REVIEW

BACKGROUND STUDY

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PREPARED FOR THE NORTHERN VILLAGE OF BUFFALO NARROWS AND
COMMUNITY PLANNING BRANCH, SASKATCHEWAN URBAN AFFAIRS
BY PINERIDGE CONSULTANTS - JULY, 1985

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July 1985

Mr. T. Pedersen
Acting Mayor
Northern Village of Buffalo Narrows

Mr. J. C. Lere
Manager of Community Planning
Saskatchewan Urban Affairs

Gentlemen:

We are pleased to submit the final report of the Buffalo Narrows Planning Study Review. As requested, we have seperated the report into two parts, the Background Study and the Basic Planning Statement.

We wish to thank the councilors and village staff for your co-operation and assistance during the study period. In addition we wish to thank all the provincial government staff who provided important information and advice. Finally we thank the residents of Buffalo Narrows for their insights and comments during the many interviews and meetings.

We were pleased to have the opportunity to work with many of you again and trust that this report will help you successfully guide the development of your community in the years ahead.

Yours Truly,

Monty Samson
Marlynne Samson.

MS/ml

TELEPHONE (306) 236-4224

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PART I — INTRODUCTION

ACKNOWLEDGEMENTS

All of these people played a valuable role in the planning process and their help is gratefully acknowledged.

Village Council - R. J. Waite, Former Mayor
- T. Pedersen, Acting Mayor
- R. Petit, Councillor
- R. Laliberte, Councillor
- L. McCallum, Councillor
- R. Ericson, Councillor
- R. Murray, Councillor

Village Staff - R. MacLeod, Administrator
- H. Bonneau, Former Clerk

Provincial Staff - T. Fraser, Community Planner

BACKGROUND

This report was prepared by Pineridge Consultants of Meadow Lake, Saskatchewan under a contract with the Department of Urban Affairs, Community Planning Branch of Prince Albert valued at $20,000 and dated December 8, 1983.

STUDY OBJECTIVES

1) Review and update the background information contained in the 1978 Buffalo Narrows Planning Study prepared by Amisk Planning Consultants.

2) Generally summarize community goals and describe the geographic, social and economic characteristics of the community and relate them to physical design proposals.

3) The study should focus on physical development and land use decisions by council.

4) Briefly review and priorize municipal capital projects.

PUBLIC PARTICIPATION

Public information meetings were held on March 29, 1984 and October 25, 1984. The meetings were advertised with posters and on the local radio station and

20 to 30 local people attended each time. At the first meeting a survey of community needs and priorities was conducted in a workshop manner. The presentations included slide talks and map presentations and discussion was lively.

The consultants met with council six times over the study period, on January 26, 1984, March 15, 1984, April 11, 1984, September 6, 1984, October 24, 1984 and May 30, 1985. In addition, a meeting to discuss flood issues was held in Prince Albert on April 25, 1984 and was attended by the mayor, consultant and provincial government staff.

An interim report was submitted to council on April 11, 1984 and updated periodically in subsequent meetings. Final review meetings were held April 10 & May 1985 where the consultants presented the final draft of the report for council approval. This information was made available at a public meeting June 6, 1985.

During most of the study period, a collection of interim colored maps showing existing conditions and proposals was continuously displayed on the walls of the council meeting room and periodically updated by the consultant.

PART II — COMMUNITY PROFILE

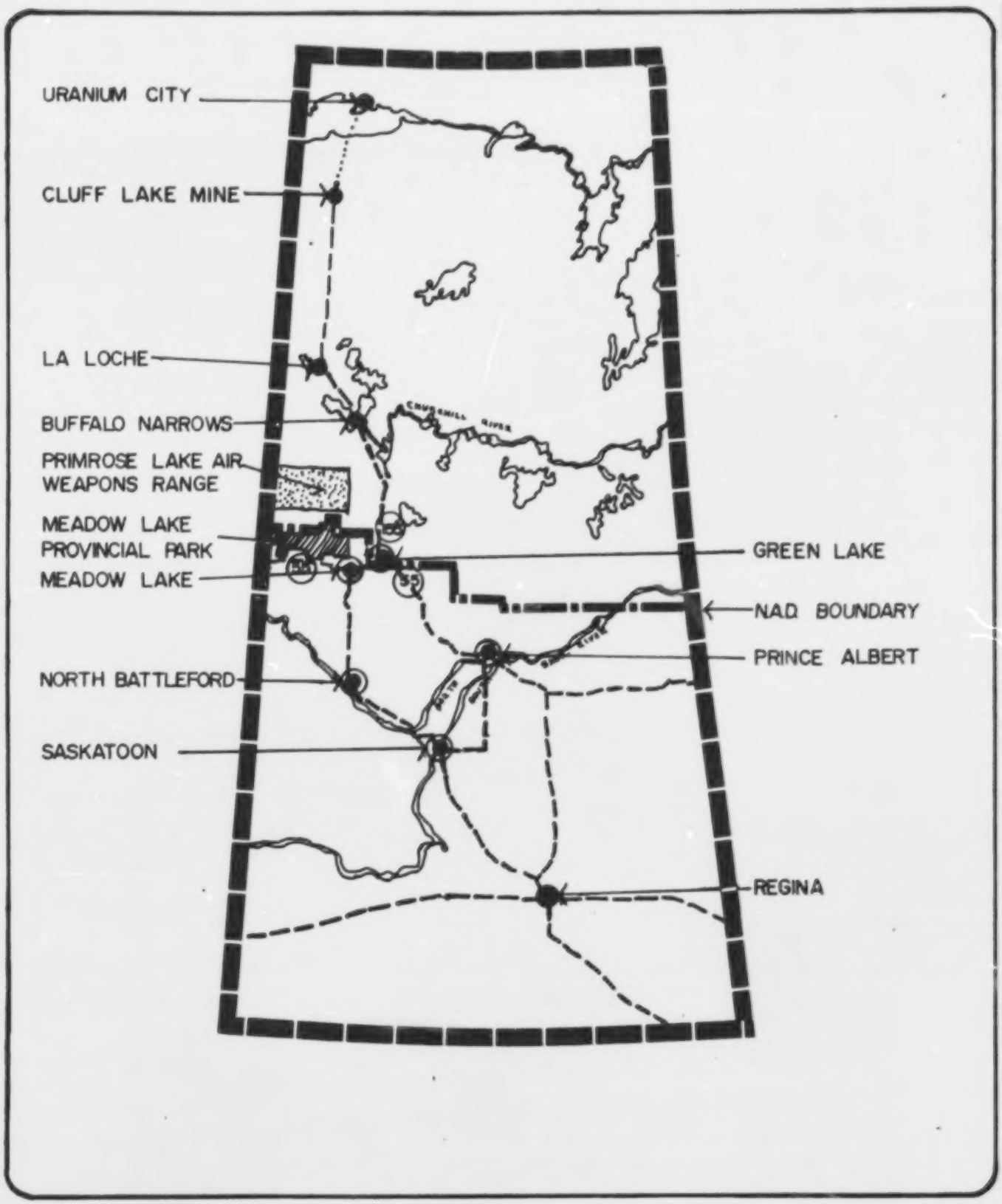
HISTORY

A comprehensive history of Buffalo Narrows is included in A Community Planning Study for Buffalo Narrows (1978) pages 10 through 21. Of recent historical interest are the archaeological studies identifying a few of the potential heritage resource sites of the area. Thomas Chartier and Martin Chartier of Buffalo Narrows have been collecting artifacts for years and have a substantial collection. They have also assisted in identifying several sites.

A rural residential feasibility study completed in 1980 for Buffalo Narrows recommended that a study be carried out to examine the heritage resource potential of the identified rural residential sites. This work was carried out by Dr. Millar of the Department of Archaeology and Anthropology, University of Saskatchewan. A similar assessment was carried out in conjunction with the Kisis Channel bridge project in 1980.

A comprehensive list of identified heritage resource sites, including those around Buffalo Narrows, along with a comprehensive bibliography of heritage resource information is part of the 1984 study, Land Management Strategy: Highway No. 155 Corridor, Section D, prepared for Saskatchewan Parks and Renewable Resources. This study shows that some artifacts recovered from the Buffalo

Buffalo stone sculpted from white quartzite, found near Saskatoon.



GEOGRAPHIC LOCATION

Narrows area indicate human occupation as far back as 9500 years ago.

The old Catholic Church in Buffalo Narrows is to be relocated and used as a museum for the Chartier collection and other heritage information gathered in the area but has not been developed to date.

The wealth of heritage resources available in the Buffalo Narrows area have the potential to become a unique cultural feature of the village of interest to the community as well as tourists and other visitors. Preservation of this heritage is an important goal for the village.

REGIONAL LOCATION

The Northern Village of Buffalo Narrows is one of several communities located within the Northern Saskatchewan Administration District which is the northern half of the province. Buffalo Narrows is a government and education center for the west side of this region and a shopping and general service center for several nearby communities. The townsite is situated on Churchill Lake near the narrows from which it took its name joining Churchill Lake with Peter Pond Lake.

The nearest large town is Meadow Lake 250 kilometers (150 miles) to the south. The nearest cities are Prince Albert, North Battleford and Saskatoon, 410 kilometers, 410 kilometers, and 550 kilometers to the south respectively. Buffalo Narrows is serviced from these centers.

TRANSPORTATION SERVICES

HIGHWAYS

Buffalo Narrows is located on Highway 155, the main transportation link between communities on the west side of northern Saskatchewan and the rest of the province. The highway, in fact, is the main street of the village. Highway 155 which extends from Green Lake in the south to La Loche in the north has been reconstructed and widened in stages over the last few years. Oiling of the new surface was completed to Buffalo Narrows in 1980 and to within 20 kilometers of La Loche by 1984. In 1981 a bridge over Kisis Channel was completed replacing the ferry service and greatly speeding up traffic.

Several gravel highways have been built or extended recently increasing the accessibility of several communities in the area. A gravel road, Highway 925, was built from Highway 155 south of Buffalo Narrows north and west to Dillon and Michelle Village and was completed in 1983. From Highway 155 north of Buffalo Narrows a gravel access road was built to Peter Pond Beach. A gravel road, Highway 955, was built north from the end of Highway 155 at La Loche, to the Cluff Lake uranium mine and has been named the Semchuck Trail.

TRUCKING

There are several types of trucking operations on Highway 155 providing fuel delivery, community servicing and mine industry servicing. Tanker trucks and smaller fuel trucks supply transportation and heating fuel to communities and mine sites. Two trucking firms carry goods to and from communities along Highway 155 and the cities of Prince Albert, Saskatoon and Edmonton: one operates out of Big River and the other out of Meadow Lake. The exploration for and the development of uranium deposits in Saskatchewan since 1975 accounts for another traffic load. Although Eldorado mine at Uranium City was closed in 1982 reducing the winter road traffic, the Cluff Lake mine is currently in operation and accounts for much of the heavy truck traffic. Department of Highways traffic information indicates there were 1000 truck trips to the mine in 1984.

This heavy truck traffic brings with it a potential hazard to communities along the highway. In Buffalo Narrows Highway 155 is the main street with a very tight curve at the heart of the central business district. Fuels account for the greatest volume of traffic and are also among the most dangerous in the event of an accident. Many chemicals, some of them extremely dangerous, are trucked to the uranium mine sites for the milling process. Yellow cake, (uranium oxide), is trucked from Cluff Lake to Saskatoon. While yellow cake will not explode or burn, it is radioactive. If breathed in, swallowed or absorbed through the skin, it can cause cancer over a latency period of 10 to 30 years. Those exposed to yellow cake or down wind from a spill are at risk.

When an accident involving dangerous goods occurs it is the local residents and those involved in the accident who will be required to deal with it. Spills are required to be reported to Saskatchewan Environment who will monitor on-site activities and advise on clean-ups but will not do the actual clean-up. The Federal Department of Transport operates CANUTEC, The Canadian Transportation Emergency Center, which gives information on how to attend to an accident but does not offer on-site help.

It is crucial that communities be aware of these hazards and be prepared to deal with an emergency situation quickly and efficiently. Emergency procedures may not be enough to protect a community if an accident takes place on the highway within a village. The Province of Saskatchewan is currently enacting legislation regarding the transportation of dangerous goods which will make certain safety practices mandatory and will improve emergency response operations.

The village council has recently expressed concern about this hazardous situation and have proposed a bypass for rerouting trucks around the edge of the community. This matter is dealt with in the policy and urban planning sections of this report. The Provincial Emergency Measures Office will provide assistance to communities wanting to organize or improve their emergency measure operations, if requested.

Sources: Various officials in the Department of Highways and Transportation in Regina, Prince Albert and North Battleford.

Spill Response and Control Section of Saskatchewan Environment, Regina.

AIRWAYS

Airport

The Buffalo Narrows Airport was built 8 kilometers south-east of the village by the Department of Highways and opened in 1980. It is the only airstrip of its standard in northwestern Saskatchewan and is very similar to the one at Meadow Lake, 250 kilometers south.

The Buffalo Narrows Airport facilities consist of two runways and a terminal building. The main runway is 1524 meters long, 30 meters wide and paved, and the cross strip is 701 meters long, 23 meters wide and also paved. Both runways are fully lighted. There are taxi lanes to each runway and there are two paved parking pads for airplanes: one for the public and the other for water bombers. The terminal building contains a waiting room, a weather station, offices and a Department of Highways repair shop. A manager's house has also been built.

Several lots are available for lease for airport related purposes and additional land has been reserved for future expansion. Two hanger buildings have been built on these lots, both owned by local air charter businesses.

Air traffic is mostly from the local charter services. There is no scheduled air service. There is some fly-in tourist traffic and some fly-thru traffic where planes refuel and leave again. The uranium mine related traffic involves moving workers to and from the minesite at Cluff Lake and is done by charter.

Source: Airport Manager, Buffalo Narrows Airport.

Forest Fire Control Base

Forest fire control is broken into two main components:

1) At the airport there is a tanker base for fire retardant and fuel for the planes. There is also an aircraft dispatch center operating in the summer.

2) Close to the airport is the fire cache, a dispatch center for fire fighters and an equipment storage area. Fire fighters are taken by float plane from the fire cache area to the forest fire. There are several buildings at the fire cache as well as a dock and a helicopter pad. The main building contains a kitchen, lounge and rooms for fire fighters to sleep in. There is also a shop, several sheds and several trailers for living accomodation.

Sources: Airport Manager, Buffalo Narrows Airport.
Resource Officers, SPRR, Buffalo Narrows.

Air Carriers

Two licenced charter airplane companies and one charter helicopter company are based in Buffalo Narrows. The airplane companies have their offices and float base near the central business district of the village. Each also has a hanger at the airport. The helicopter company works mainly during the fire fighting season and is based at the northeast end of the village.

COMMUNICATION SERVICES

TELEPHONE

Sask Tel provides telephone service to Buffalo Narrows at a par with the rest of the province. As of January 1985 there are 267 residential connections and 84 business connections in Buffalo Narrows for a total of 351 connections.

Sask Tel has a permanent staff of three people in the village. Customers arrange service calls and a change in service by calling numbers listed in their directory. Sask Tel then dispatches calls to the local office.

MAIL

There is daily mail delivery Monday through Friday to and from Buffalo Narrows by truck. The Canada Post Office is open Monday through Friday from 8:30 a.m. to 5:30 p.m. and Saturday from 8:00 a.m. to 12 noon. There are 400

lock boxes in the lobby which is open an additional two hours in the evening Monday through Friday.

RADIO

The local radio station,CIBN - 1450 AM, operated by the Buffalo Narrows Broadcasting Corporation is on the air 8:00 a.m. to 6:00 p.m. daily using a 50 watt transmittor. Programming includes community announcements, phone-in shows, birthday greetings, dedications, bingo and advertisements. Attendance at functions has increased since the radio began broadcasting.

In northern Saskatchewan regular CBC AM programming is rebroadcast on FM frequencies except that Keewatin Country replaces Radio Noon from 12 noon until 2:00 p.m. Monday through Friday. Keewatin Country is produced in La Ronge, Saskatchewan and includes one half hour of programming by the Saskatchewan Northern Native Communication Organization. The Cree and Dene languages are used especially in the message service. Buffalo Narrows receives CBKD 103.5 FM.

TELEVISION

Buffalo Narrows residents have the choice of CBC Saskatoon and a local cable service delivering five satellite channels. The CBC signal is boosted at a repeater tower 12 kilometers north of the village. Cable service is provided through the Buffalo Narrows Broadcasting Corporation, and is serviced by Sask Tel.

BUFFALO NARROWS BROADCASTING CORPORATION (BNBC)

BNBC is operated by a Board of Directors as a locally owned non-profit corporation. BNBC began with a satellite dish and a two channel transmittor several years ago. They also provided some local programming with paid advertisements. At that time BNBC employed 4 people.

In the summer of 1983 the corporation applied for and was granted a licence to provide a 4 channel cable service and a local radio station both with local programming including news and local affairs as well as other services. They now employ one full time person and some part time staff. In 1982, under a Federal Grovernment program, 2 students were hired for the summer.

The BNBC is self supporting through bingo, donations and the sale of advertisements.

NEWSPAPERS

There are no local newspapers in the northwest. The nearest papers are the two weeklies from Meadow Lake, one distributed free through the Post Office and the other sold by subscription. Both are also sold by vendor. Other newspapers are available from various cities but delivery is a problem.

POPULATION

POPULATION CHANGE

The analysis of the Buffalo Narrows population is based on information from the Saskatchewan Hospital Services Plan coverage records. The population of Buffalo Narrows has been stable over the period 1969 through 1979. In the last 5 years there has been a marked annual increase. See Table 1. The average annual increase for the last 15 years is 0.6% but for the last 5 years is 3.6%.

TABLE 1

Population Growth and Percentage Change, 1968 - 1984

Year	Population	% Change
1968	1121	
1969	1072	-4.4
1970	1079	+ .7
1971	1128	+4.5
1972	1119	- .8
1973	1055	-5.7
1974	1041	-1.3
1975	1051	+1.0
1976	1042	- .9
1977	1043	+ .1
1978	1051	+ .8
1979	1043	- .8
1980	1131	+8.4
1981	1118	-1.1
1982	1168	+4.5
1983	1210	+3.6
1984	1245	+2.9

Source: SHSP 1968 - 1984

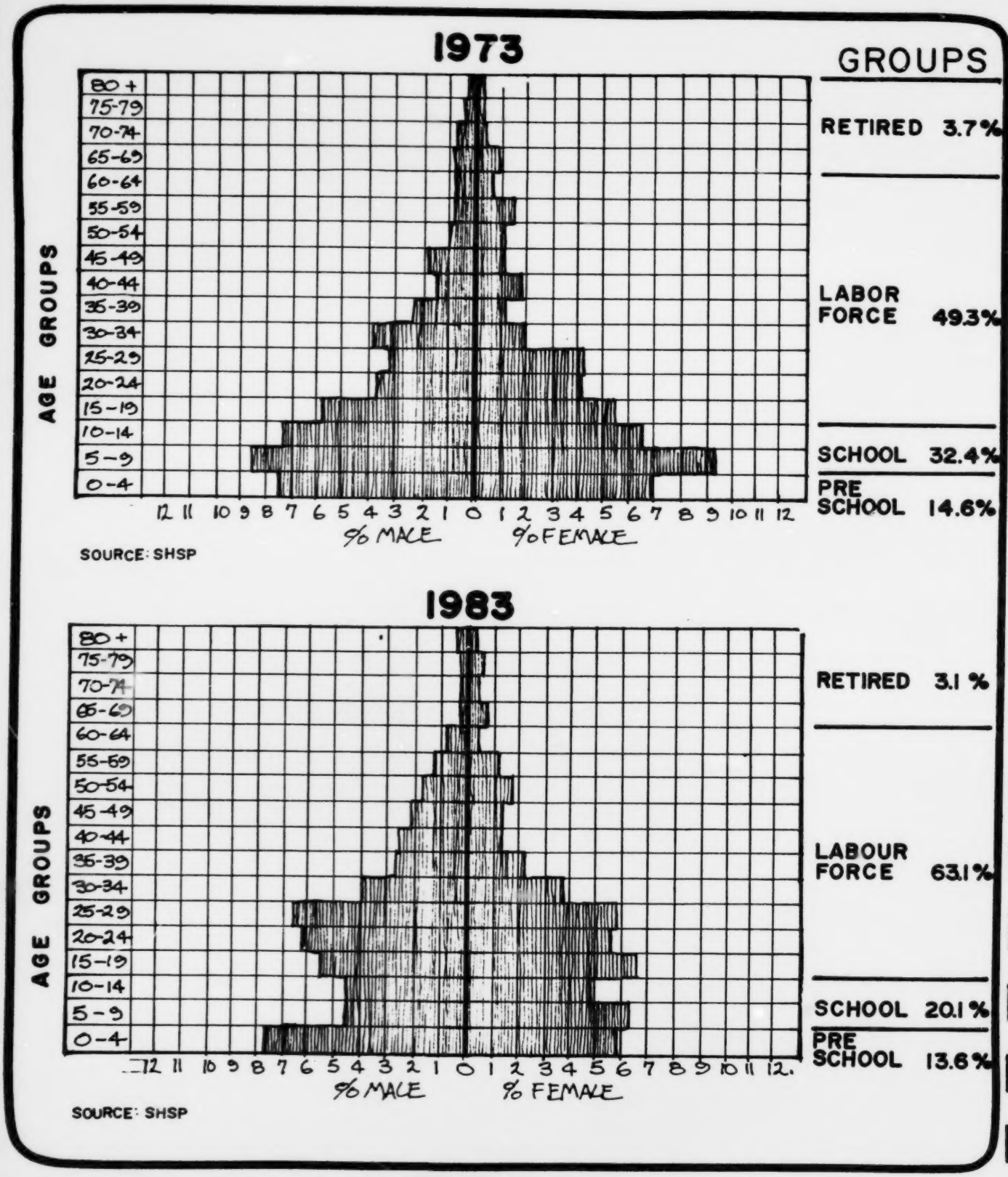


TABLE 2

POPULATION COMPARISON - BUFFALO NARROWS

There has been a change in the age group makeup of the Buffalo Narrows population over the last 10 years, from 1973 to 1983 as shown in Table 2. While the percentage of people over age 64 and under age 4 have remained nearly the same, the percentage of people of school age, 5 - 14 years, has decreased by 12% and of the labor force, 15 - 64 years have increased by 14%. 45% of the population in 1983 is under twenty years of age compared to 58% in 1973, a considerable change although this continues to indicate a very young population requiring special planning considerations. The percentage of females and males has remained almost the same over this 10 year period. The enlarged labor force is largely accounted for in the return of people originally from Buffalo Narrows who had moved elsewhere to work and live, who have been returning "home" as a result of lay-offs and lack of employment elsewhere. The proportionate decrease of the school age groups may be reflected in the stable school population over the last 8 years.

SCHOOL POPULATION

The Twin Lakes School total population as shown in Table 3 has been relatively stable as has the kindergarten population. The number of students entering Division 4 is growing steadily. If students continue to stay in school longer the total school population should grow steadily even without an increase in the number of people of school age.

TABLE 3

Twin Lakes School Population
1974 - 1984

Year	Kindergarten	K-10	K-12
1974-75	25	299*	
1975-76	15	175	
1976-77	20	289	
1977-78	23	302	
1978-79	--	---	
1979-80	21	272	
1980-81	26		291
1981-82	33		295
1982-83	20		289
1983-84	31		291

Source: Twin Lakes School records.

* Includes some children now attending another school.

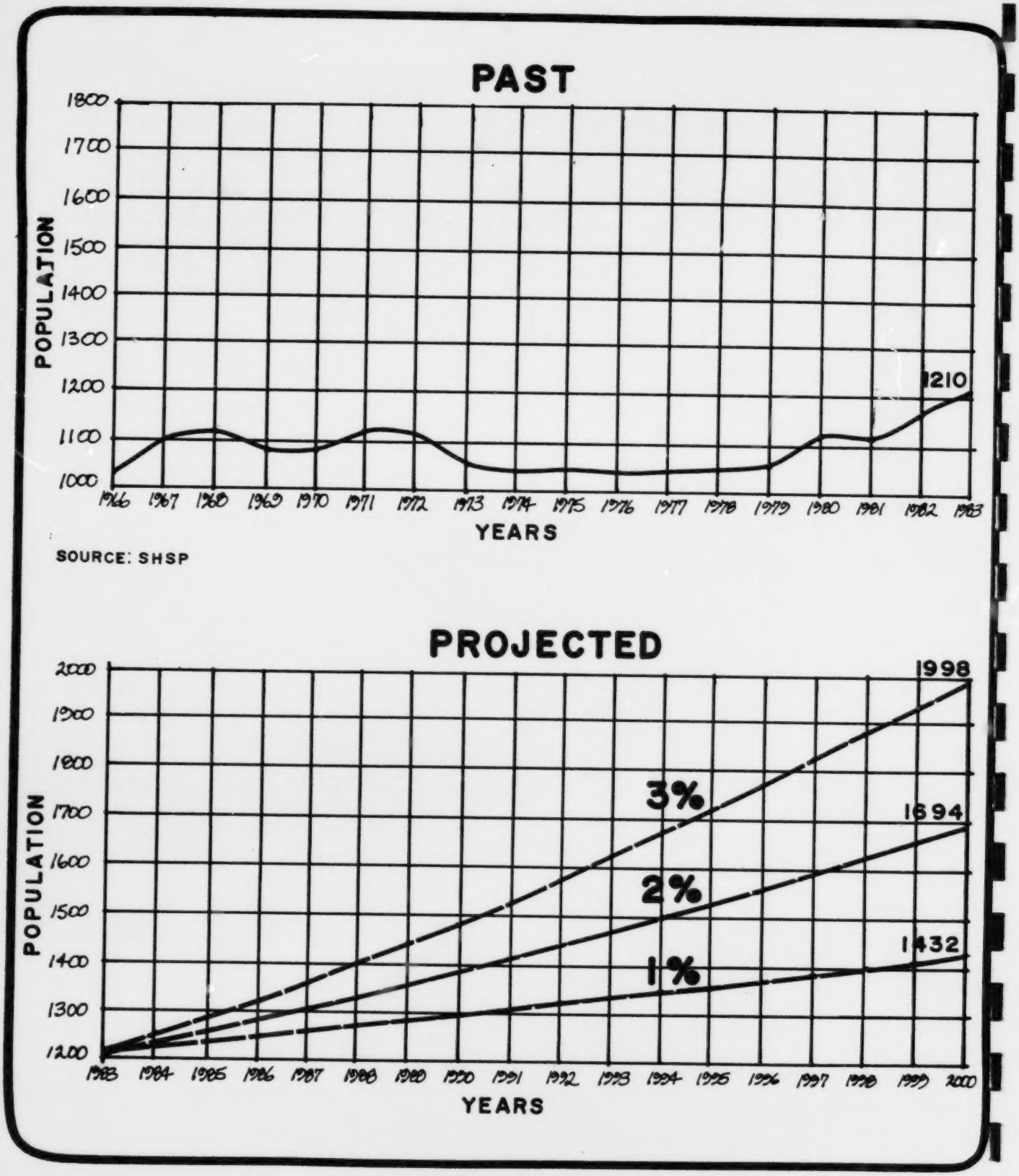


TABLE 4

BUFFALO NARROWS POPULATION GROWTH

FORECAST

Table 4 shows the pattern of population growth in the past and includes projections to the year 1998 using 1983 as the base year. Three different rates of increase are presented. A forecast is difficult to do with accuracy because of the many factors involved. The 1978 planning study using 1977 as a base year predicted an accurate rate of between 2% and 3% (Amisk, 1978, p.39). A continuation of this forecast should accommodate all but a sustained period of growth.

If the average annual growth rate is 2%, then:

a) in five years the population will be 1336
b) in ten years the population will be 1475
c) in fifteen years the population will be 1629.

If the average annual growth rate is 3%, then:

a) in five years the population will be 1402
b) in ten years the population will be 1625
c) in fifteen years the population will be 1884.

ETHNIC GROUPS

The majority of Buffalo Narrows residents are of Cree and European ancestory. Many of the Europeans are Scandinavian in origin. There are few resident treaty Indian people.

ECONOMIC CHARACTERISTICS

OVERVIEW

Traditionally the Indian people of this area lived in seasonal camps on the land. Permanent settlements developed around trading posts, churches and schools because of the development of the fur industry. Since then, other resources of northern Saskatchewan have been developed including the forest and uranium resources. However, these contribute very little to the economic base of northern settlements. In spite of the millions spent by senior governments to provide housing, infrastructure such as sewer and water systems and roads, and to develop mineral resources such as uranium, northern Saskatchewan settlements do not have an adequate economic base to support themselves. A total value of government sponsored construction in Buffalo Narrows excluding public housing from 1973

through 1980 was 12.8 million dollars according to a Northern Administration District community profile. Northern people and their municipal governments are highly government dependent and as people acquire a more urban lifestyle they leave behind traditional activities on the land that used to supplement family needs.

Buffalo Narrows was built around mink ranching and commercial fishing and has become, especially with the creation of the Department of Northern Saskatchewan in 1972, a regional government service center as well as an education and commercial center. This has helped to provide some economic stability in the village. The Buffalo Narrows Canada Employment Center labor force information indicates that the unemployment rate in Buffalo Narrows is 85% while in the rest of the region unemployment is as high as 99%.

EMPLOYMENT REVIEW

The major employer in the village is the provincial government largely because Buffalo Narrows has become a regional government center. The 1978 planning study indicated that 51% of the jobs in Buffalo Narrows were provided by the federal and provincial governments, 28% by the private sector, and 21% by the traditional pursuits of trapping and fishing (Amisk, 1978, p.78). Although such information is no longer available it is suggested that this balance is maintained today.

Government

The provincial government has an office building from which it offers the services of the Departments of Highways and Transportation, Northern Saskatchewan Economic Development, Supply and Services, Parks and Renewable Resources and Social Services. Parks and Renewable Resources also coordinate forest fire control. There are also education and health services as well as NorSask Electric and Sask Tel staff.

The Federal Government operates a Canada Employment Center, a Post Office and a Weather Information station. Police protection is provided by the RCMP.

Commercial

The commercial sector is the most developed of any settlement on the west side of northern Saskatchewan, offering a diverse range of commercial services. Local residents are gaining experience and developing business skills.

There are three grocery stores, two cafes, a hotel, a hair stylists, a bulk fuel outlet, two vehicle service centers, several taxi/bus services, a pool hall, a video outlet, a laundromat, a fish plant, three charter air services and a construction company among others. Several of these businesses have been operating for many years. There is still no bank or credit union offering financial services despite many efforts by the community to obtain one.

The commercial sector is dependent on local and regional cash flow and the ability of people to purchase their goods and services, and is very dependant on the continuation of government activities which support their community.

Traditional

Very few of the people involved in the traditional areas of fishing and trapping earn enough to support themselves. Fur and fish resources are used to supplement family income and needs.

SOCIAL ASSISTANCE REVIEW

Social Services financial assistance is of two main types - P/R and RSA. P/R stands for payroll and includes those people who cannot work for medical reasons and people who are temporarily unable to work. RSA stands for Regional Service Account and includes those people who have a temporary monthly shortfall but who are willing and able to work. After 3 months on RSA a client is transferred to P/R. With the increased case loads since the summer of 1983 it has been recommended that some RSA cases become P/R cases sooner than the recommended 3 months.

There are seasonal variations in assistance claims. For example, assistance claims are usually lower in the spring. Assistance payments correlate directly to the employment situation of an area and as is expected with a local unemployment rate of 85% there is a heavy reliance on assistance. Both the number of P/R and RSA cases have increased dramatically since 1983. While government sponsored work projects take some people off assistance this is mostly temporary in nature and many return to assistance when the projects end.

RESOURCE SECTOR ECONOMIC REVIEW

Trapping

Trappers from Buffalo Narrows, with the exception of two or three trappers,

trap in fur conservation area N-15. As Table 5 shows there are a significant number of active trappers even though their actual income is not high. Trapping is more strongly linked to the tradition of living from the land and supplementing a family's needs than it is to being the sole support for a family.

TABLE 5

Fur Production in Fur Conservation Area N-15

Year	No. of Active Trappers	Total Production
1979-80	32	$98,753.88
1980-81	48	$64,005.51
1981-82	47	$35,919.07
1982-83	42	$43,227.20

Source: Saskatchewan Parks and Renewable Resources, Buffalo Narrows

Fishing

Commercial fishing remains important to Buffalo Narrows. It is a renewable resource that with good management can remain an important part of the economic base for northern people and provide a quality food for domestic and export markets. Fish stocks showed signs of depletion after 1957 due mainly to overfishing with small mesh nets and to fishing in spawning areas. There is disagreement about the extent of the recovery that has been attained. Actual recovery is difficult to measure because harvests vary so much from year to year. There is a summer and a winter commercial fishing season with a weight and a mesh limit for each lake monitored by Saskatchewan Parks and Renewable Resources. The uncaught portion of the summer limit can be added to the winter limit, but the uncaught portion of the winter limit cannot be carried forward. Although the number of fishing licences is declining, fishing is considered to be a stable and viable local industry.

There are two aspects to commercial fishing in Buffalo Narrows: the local agent, Waite & Co., and the local fishermen.

Waite & Co.

Waite & Co. of Buffalo Narrows bought fish, processed them in their plant and then marketed them from 1943 until 1969. When the Freshwater Fish Marketing Corporation (FFMC) became the sole buyer of commercial freshwater fish in Canada,

private fish processers were phased out. FFMC is currently building a packing facility which is scheduled for completion in 1985, and is located next to the older facilities owned by Waite & Co. The new building will be a holding station where fish are weighed, graded, packed on ice and shipped by semi trailer truck to Winnipeg for processing and sale. This facility will be leased to the local agent, Waite and Co. who is one of the larger agencies working with the corporation and will handle fish from many lakes in the region.

Fishermen bring their catch to the agent who keeps records of their catch and gives them an initial payment. Final payment from FFMC is made through the same agent. Prices vary greatly depending upon species, size, and grade, as shown in Table 6.

TABLE 6

Fish Prices By Species, Winter 1984-85
(in cents per pound))

Species	Size			
	Small	Medium	Large	Jumbo
Whitefish*				
a) Export	$.51	$ .76	$.81	$.86
b) Continental	.21	.26		
c) Cutters	.19			
Pickerel	.91	1.36	.91	
Lake Trout	.75	.90	.75	
Northern Pike		.38		

* Whitefish are graded by cyst count.

Source: Dick Waite, Buffalo Narrows.

Buffalo Narrows Fishermen

Buffalo Narrows residents are licenced to commercial fish through the local fishermen's co-op. Once voted in by the Co-op Board at an annual meeting they keep their licence as long as they continue to fish. There is no minimum catch required. There are 51 licences, a number that has been stable for several years. Three to five of these are big operators that earn their living fishing and fish the more distant as well as the nearby lakes. The remainder of the fishermen fish the nearby lakes mainly in the summer. The annual fish catch for Buffalo

Narrows fishermen is shown in Table 7. Although production for some individual lakes varies considerably, the total production by weight is reasonably stable.

TABLE 7

Annual Fish Production by Buffalo Narrows Residents
(in kilograms)

	1979-80	1980-81	1981-82	1982-83
Churchill Lake	118,927	95,480	98,258	82,588
Frobisher Lake	53,199	35,041	33,696	28,754
Peter Pond Lake - Big	57,244	29,025	47,269	45,968
Peter Pond Lake - Little	71,254	67,961	72,078	75,488
Subtotal	300,624	227,507	251,301	232,798
Other Northern Lakes	37,385	94,414	37,746	98,769
TOTAL	338,009	320,921	289,047	331,567

* Other northern lakes are grouped together because these lakes are usually fished by one fisherman and such production records are confidential.

Source: Saskatchewan Parks and Renewable Resources, Buffalo Narrows.

Table 7 shows only the production of Buffalo Narrows residents and not the total production of the lakes. Lakes with a production of less than 4400 kilograms have not been included so that the actual production total would probably be 10 - 20% higher than is indicated. The catch for Churchill is mostly northern pike; in Frobisher Lake it is mostly northern pike with some pickerel and whitefish; in Big Peter Pond it is whitefish for export with some northern pike and pickerel; and in Little Peter Pond it is pickerel with some northern pike. Several of the northern lakes produce lake trout, such as Cree Lake, Engmann, Mayson and Weitzel Lakes.

Lakes have been classed as residential or free lakes by the fishermen. Residential lakes are open only to fishermen living near that lake and free lakes are open to any fisherman. For example, Churchill Lake and Big and Little Peter Pond Lakes are residential for Buffalo Narrows fishermen as well as other near-by communities.

Management practices other than restricted limits for recreational fishermen, and restricted mesh size and weight limits for commercial fishermen should be considered to protect, maintain and improve fish stocks. With the increased accessibility of northern lakes there will be more recreational fishermen competing with the commercial fishermen for a finite but renewable fish stock. Fish hatchery projects might be used to improve fish stocks and provide local employment.

Sources: R. Waite, Buffalo Narrows
Jake Halvorsen, Fishermens Co-op, Buffalo Narrows
Saskatchewan Parks and Renewable Resources, Buffalo Narrows.

Wild Rice

Wild rice production is a new industry for Buffalo Narrows and area. There are 49 permits held by residents of Buffalo Narrows with 60 - 80% of them being active. There is no information currently available about wild rice production.

Source: Saskatchewan Parks and Renewable Resources, Buffalo Narrows.

Forestry

The provincial government sawmill was closed a few years ago because of operating losses of around $600,000 annually. Commercial timber stands around Buffalo Narrows are harvested for the Green Lake mill by contractors. Approximately one million board feet of mostly spruce with some pine is harvested annually by two large contractors and several small ones. There are no local logging contractors, perhaps because Buffalo Narrows has no history of logging and therefore, has a shortage of people with these skills.

While lumber formerly could be purchased from the mill for local projects, all lumber must now come from Meadow Lake or other more distant locations. A local commercial lumber yard had operated in the community for several years but recently closed its doors and is now for sale.

Source: Saskatchewan Parks and Renewable Resources.

Tourism

Tourism remains underdeveloped in the Buffalo Narrows area. There are two local aircraft charter companies with summer contracts to fly fishermen further

north to Porter Lake and Careen Lake fish camps. Tourist accommodation in the region is limited to the Buffalo Narrows Hotel, an outfitter with a few cabins and a small campground 26 kilometers south of the village on Lac Ile-a-la-Crosse, and a small partially developed campground managed by the province 24 kilometers north on Taylor Lake. The major lakes in the area, Peter Pond, Churchill and Frobisher, have a moderate capability for water based recreation (Interplan, 1984, p. 43) although sport fishing in the lakes is generally poor. Cool water temperatures, wave action and algae formation are characteristic of the large lakes and are a deterent to swimmers. As a result, many community residents use the Taylor Lake campground and cottage subdivision.

Within the village corporate boundaries is a small village-owned picnic site and beach on Peter Pond Lake used mostly by local people and another beach, accessible by boat only, at the mouth of Kisis Channel. Approximately 7 kilometers northwest of the village is a unique recreation feature, Big Buffalo Beach, an 8 kilometer long beach accessible on foot from a parking lot served by road access from Highway 155.

Other recreation opportunities in the region include pickerel fishing at Dillon and Niska Channel accessible by road from Highway 155, and a bird sanctuary and nesting site at Kazan Lake accessible by aircraft (Pineridge, 1983, p. 3).

With the improvement and oiling of Highway 155 there has been an increase in the numbers of recreational vehicles visiting the area but no corresponding development of recreational facilities. There is clearly a need for both short and long term tourist facility planning. Provision for current needs should include a combination recreationvehicle campground and motel. Provision for future needs should include setting aside suitable lands within the corporate boundaries for potential campground development near existing beaches. A growing trend in the tourist industry is toward people seeking non-consumptive recreational experiences and the historical and natural resources of the Buffalo Narrows region could draw increasing numbers of these people if convenient facilities were available locally. An action plan for a recreation vehicle campground and motel development is included in this report.

The potential to develop a tourist industry at Buffalo Narrows needs further study. Of particular concern in such a study would be to explore ways to ensure that local residents have opportunities to become investors, owners and operators in the industry rather than just filling the unskilled, lowest paid jobs as so often has occurred in the past.

Mining

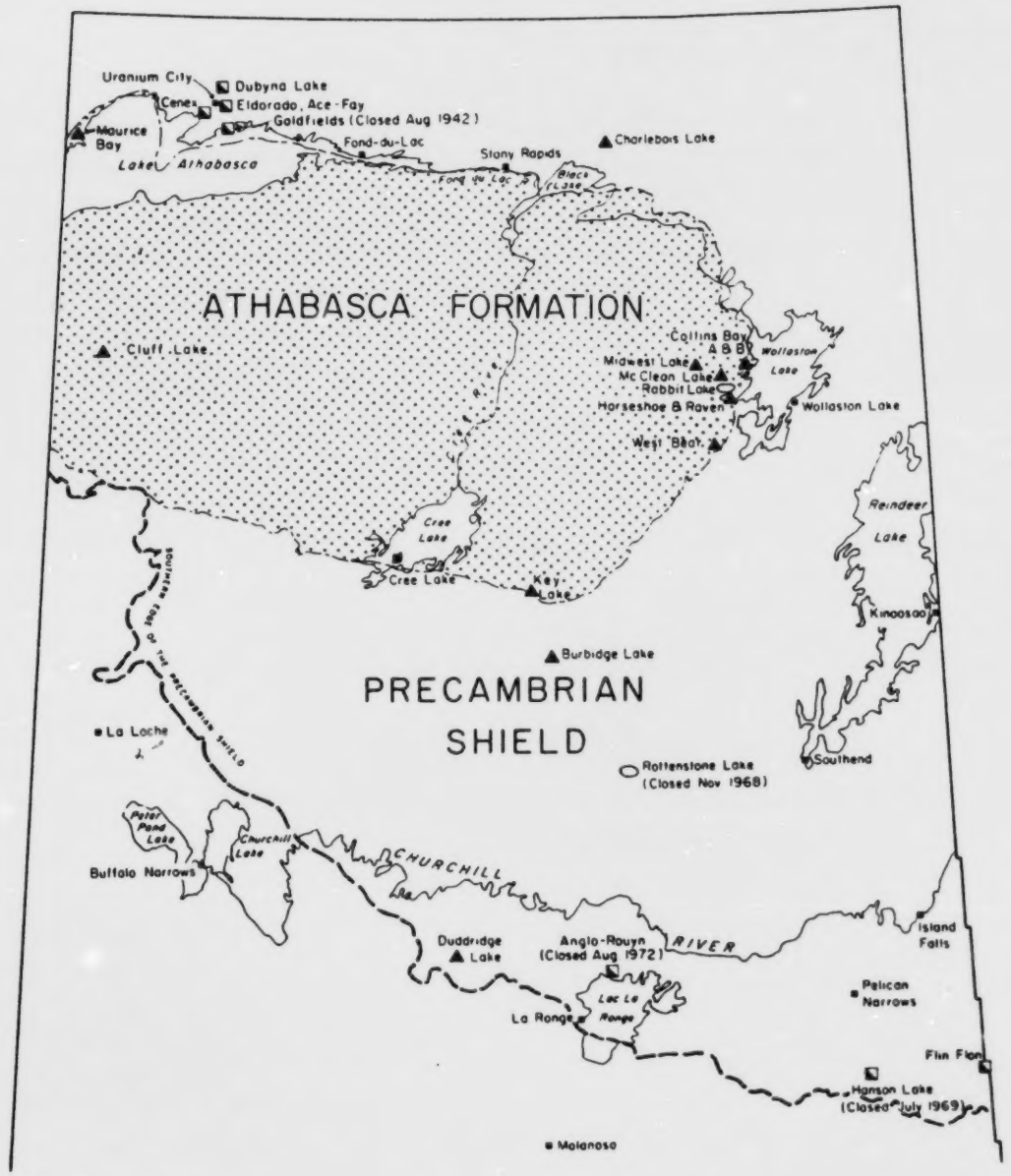
In 1967-68 a potential open pit uranium mine at Rabbit Lake and high grade uranium deposits at Cluff Lake were discovered. These discoveries began a period of rapidly expanding exploration in the Athabaska Basin area of Saskatchewan. Until that time the Beaverlodge District around Uranium City had been the focus of uranium interests in the province.

Two mines are presently in production -- one at Key Lake and another at Cluff Lake (Amok Ltd.). The Eldorado Uranium Mine at Uranium City was shut down in 1982. A third mine at Rabbit Lake (Gulf Minerals Ltd.) has mined out one ore body and will be milling uranium oxide from a new ore body, the Collins Bay B Zone, in the summer of 1985. It is estimated that 5 million kilograms of uranium oxide will be produced each year for 6 years from this ore body. The Cluff Lake mine is in the production stage of Phase II in which they are working 5 ore bodies which are expected to produce 2.5 million kilograms of uranium oxide annually for the next 10 years. In Phase I a higher grade ore deposit was mined. The mill was altered to suit the lower grade ore of Phase II. The Key Lake uranium mine began producing in 1984 and is expected to produce 12 million kilograms of uranium oxide annually for the next 16 years. The uranium oxide from these mines is sold on contract.

The province has signed a surface lease agreement with Amok Ltd. which requires 50% of the employees of the mine and mill operation to be residents of the Northern Administration District. The lease agreement with Key Lake Mining Corporation requires that 50% of the employees be native northerners from the Northern Administration District. In addition, the companies are required to ensure the employment of a large number of northerners during the construction phase and to give northern businesses special preferences and special opportunities to supply goods and services.

The expected economic boom associated with the development of the uranium mining industry in northern Saskatchewan has not materialized. Uranium mining has contributed little to the economic base of Buffalo Narrows although some residents have gained, through on-the-job experience and special training programs, work and experience in a trade that they might not otherwise have gained.

Buffalo Narrows is 350 kilometers south of the Cluff Lake uranium mine and all vehicular mine related traffic passes through the village. (See also the Trucking section of this report.) In 1984 14 Buffalo Narrows residents were employed by Amok Ltd. at the Cluff Lake mine. Employment information was not available for Key Lake which went into production in 1984.



Source - Denner & Reeves, Uranium Reserves and Potential for Northern Saskatchewan. 1981. Saskatchewan Mineral Resources Report 81-85.

It remains to be seen what the health risks to workers will be and how these will compare to those experienced at the Eldorado Mine in Uranium City and the Elliott Lake Mine in Ontario. The potential health effects of low level radiation are not widely known and continue to be studied. The environmental impact of this short lived industry with its long lived radioactive waste problems remain controversial.

Sources: Greyeyes, David, Amok Ltd., Saskatoon
Reeves, Philip, Saskatchewan Energy and Mines, Regina
Pineridge Consultants, Background Report of the Green Lake Municipal Development Plan. 1983.

COMMUNITY SERVICES

EDUCATION

Twin Lakes School

The Twin Lakes School, part of the Northern Lights School Division serving all of northern Saskatchewan, offers kindergarten through grade 12. There are 19 teachers and 3 NORTEP trainees on staff. The NORTEP program is a special teacher training program for northerners.

The school facility underwent a $4.8 million addition and renovation completed in 1982. The school is considered to be well equipped by Saskatchewan standards and includes:

- 15 classrooms
- Industrial Arts Room
- Home Economics Room
- Music Room
- Fine Arts Room
- Resource Center
- Library
- Gymnasium

Most students are at least one year behind their expected grade level. This becomes more noticeable in the higher grades. The drop-out rate is highest in grades 6, 7, and 8 and has been declining as school programs improve and as education becomes more valued in the community. The goal of many students is to graduate from grade 12. Several students have gone on to further training and this is becoming a goal for more students. While the drop-out rate was 80% - 90% five years ago it is as low as 33% today.

Teacher turnover in the school is low. As Buffalo Narrows becomes less isolated and provides more services such as grocery stores and garages, more teachers are considering Buffalo Narrows home. Several teachers have built homes in the village.

Local School Board

The Local School Board is a 7 member elected board acting in a mainly advisory capacity to the Northern Lights School Division.

Westside Community College

Westside Community College offers a variety of adult education opportunities in an expanding scope for the west side of northern Saskatchewan. In Buffalo Narrows it offers social demand classes such as crafts, a variety of vocational training courses, adult upgrading and a Learning Center. The Buffalo Narrows facilities serve the west side area and includes an 80 student residence to accommodate out of town students.

Westside uses most of a large building which it shares with the Departments of Supply and Services and Highways and Transportation, to offer a variety of vocational courses. For example, they have offered or will be offering such courses as:

- Pre-employment Carpentry
- Industrial Mechanics
- Welding
- General Laborers Course
- Small Motor Mechanics
- Pre-trades for Women

They also offer cooking courses at the residence and business and office administration courses. Several of the courses are offered as an extension of the Technical Institute in Saskatoon.

Each year for several years there has been an Adult Basic Education course for levels 8 - 10 from September through May. In 1985 - 86 there will be an Adult grade 11 and 12 class offered. There is also a Learning Center where students can work on their own towards upgrading their basic education. The service is free and is open daily Monday through Friday from 9:00 a.m. until 4:00 p.m..

Sources: Leonard Kalk, Principal, Twin Lakes School
Therese Thompson, Secretary, Twin Lakes School
Roy Shounard, Westside Community College, Buffalo Narrows

HEALTH SERVICES

Three nurses live in Buffalo Narrows and work at the Health Center. They take turns being on call. A doctor comes twice a week from Ile-a-la-Crosse to see patients at the Health Center. A Community Health Worker supplements the nurses in the community. The Health Center has 2 examining rooms, several offices, a medication/treatment room and a drug supply room. When hospital care is required, patients are sent to Ile-a-la-Crosse, Meadow Lake or Saskatoon.

Other health services include a Public Health Nurse, a Mental Health Nurse, annual optometrist visits and annual specialist doctor visits. The Dental Clinic operated in the Health Center employs one dental therapist and one dental assistant, and is mainly involved with the Child Dental Plan. A dentist comes to Buffalo Narrows once a month.

Buffalo Narrows residents continue to express dissatisfaction with existing health care and clearly want more nurses, a resident doctor(s), and a hospital in their community, as well as expanded programs for mental health and alcohol rehabilitation. Residents are dissatisfied with the extensive travel often required for health care.

Sources: Village Council Survey, 1984
Community Profile, Saskatchewan Tourism and Small Business, La Ronge.

RECREATION SERVICES

Currently, the recreation facilities for this community consists of the following:

1) a school gymnasium which:
   - is too small for many indoor sports
   - has no spectator seating
   - has equipment not available to the public
   - has very stringent use requirements
   - is overbooked for both school and community use

2) a community hall which:
   - is too small with a capacity for only 140 people
   - is a 30 year old, metal building in poor repair with high heating and maintenance costs
   - is inconveniently located

3) a 2 sheet curling rink which:
   - is too small
   - is a wood frame building, nearly 30 years old, in poor condition with high maintenance costs
   - has no lunch counter
   - is inconveniently located

4) a recently completed arena which is extensively used.

5) several ballfields either near the lakeshore or adjacent to the school and arena.

6) a church hall in good condition which is too small for large gatherings and indoor sports.

7) an outdoor running track adjacent to school and arena.
(Pineridge, 1985, p.2)

The village council is building a recreation complex in stages on a site close enough to the school to be convenient for its use. Phase I was the indoor ice arena; Phase II will be a community hall constructed in 1985; and Phase III will be a curling rink built when funds are available. These buildings will form one large complex with shared kitchen, storage and entrance features, making it a unique multipurpose facility.

Organizations

There are a large number of recreational organizations in the community. These include:

1) 9 senior hockey teams
2) 6 minor hockey teams
3) 8 senior slowpitch ball teams
4) 4 senior softball teams
5) 3 junior softball teams
6) 2 snowmobile clubs
7) Brownie and Girl Guide groups
(Pineridge, 1985, p.3)

Recreation Board

The Recreation Board, a seven member board appointed by the village council, raises funds to run programs and works with the Recreation Worker to schedule facility use. The total annual budget for recreation related services in Buffalo Narrows for 1984 was $150,000. Of this amount, $48,000 or 32% was raised by the Recreation Board (Pineridge, 1985, p.10).

MUNICIPAL SERVICES

Local Government

Since 1983, local government is provided by a mayor and 6 councillors to the Northern Village of Buffalo Narrows under the Northern Municipality Act. The Village office employs a Town Administrator, a clerk typist and maintenance staff. The responsibilities and powers of local government under this Act are similar to but not as comprehensive as those of southern communities. Local government

operates within the legal boundaries of the Village (see also Rural Planning Area of this report). Following the 1978 planning study, land use zoning bylaws were established and will be updated following this planning review.

Finances

The Village provides services to its residents from revenues gained from provincial per capita grants, conditional grants and from locally raised revenues such as property taxes and rentals. The greatest portion of revenues come from government sources.

In 1983, out of total revenues of $621,803.00, 71% came from grant sources. Property taxes accounted for 14% of revenues while rentals and other miscellaneous services accounted for the remaining 15%. There was a surplus of $51,437 out of which the sewer and water deficit of $44,204 was paid.

Services

The Village operates the municipal sewer and water system, builds and maintains Village streets, collects garbage and provides fire protection. The Village maintains a firehall, 2 fire trucks and has a Fire Chief and a volunteer fire brigade. Recreation facilities are built and maintained by the Village (see also Recreation Services this section).

Policing

There is an 8 member RCMP detachment in the Village serving the community and surrounding rural areas. The Village does not share in the cost of providing police services.

HOUSING

BACKGROUND

Housing is the largest and most important land use in the Village. Included in this section is updated information from the 1978 Amisk Planning Study, a review of current trends and recommendations for future housing policies.

HOUSING STOCK

The Amisk study indicated a total of 229 houses, all single family homes or mobile homes. Of those, 50% were in fair to good condition, 30% in poor condition and 20% were mobile homes. Since 1978 a large number of new housing

units have been added. Table 8 shows the type and quantity of new housing construction since 1978.

TABLE 8

New Housing Construction

Year	Public Housing Units			Rental Staff Housing Units		Other
	For Sale Single Family	Rental Multiple Family	Rental Seniors Housing	Single Family	Multiple Family	
1965-1978	99					
1978	10 (2)			8 (3)		
1979	11 (2)			2 (3)	8 (3)	
1980	22 (2)		8	2 (3)		
1981	8 (2)			4 (3)	13 (3)	
1982						1
19836 (2)						5
1984		12 (4)				3
1985						6
TOTALS	156	12	8	16	21	15

Sources - (1) 1978 Amisk Study
(2) S. McCreary, S.H.C., P.A.
(3) R. Mulholland, Sask. Supply and Services - P.A.
(4) J. Szeszorak, S.H.C., P.A.
(5) H. Bonneau - Northern Village of Buffalo Narrows

From table 8 we can see that 77 public housing units were built with 74% (57) as for sale units and 26% (20) as rental units. A total of 37 provincial government staff housing units have been built along with 15 other units (private, federal government or crown corporation). In the past 7 years a total of 129 new homes have been constructed in the Village. Of these, 32% (41) have been multiple family type (duplex and semi-detached). The trend towards government sponsored multiple family housing began in 1979 for staff housing and 1980 for public housing.

In addition to this, the Village has begun development of a rural residential subdivision south east of the settlement and surveying and some clearing work has been completed.

These trends appear to be generally in accordance with the proposals and recommendations of the Amisk study and resident survey which called for elderly persons housing, multiple family rental housing and rural residential housing opportunities.

COMMUNITY PRIORITIES

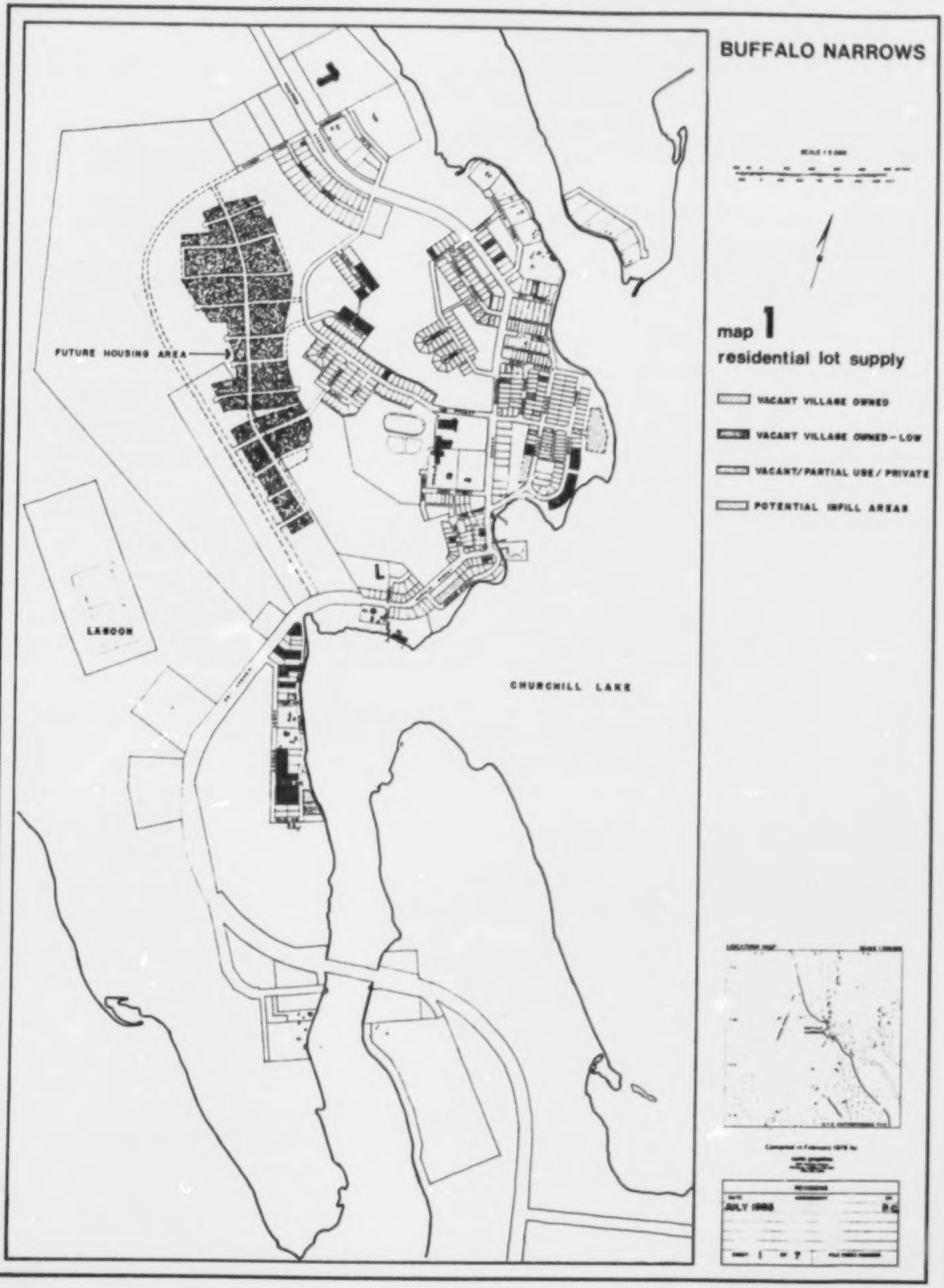
From recent public meetings such as the one held on March 29, 1984 as part of this study, it is clear that current community priorities call for more rental housing units to meet the needs of single people, single parents, small families and the elderly. For these groups, traditional single family housing is too expensive and often larger than necessary.

Another need identified at recent public meetings and becoming more visible in the Village is the trend towards log house construction by local families. These homes, a number of which are currently under construction on unserviced lots, are privately financed outside the public housing programs. This move towards independence from government sponsored programs shows considerable local initiative. The independence movement reflects a dissatisfaction with the economically vulnerable and highly dependent village lifestyle provided through public housing programs.

GOVERNMENT PROGRAMS

The major housing developer in the Village is the Saskatchewan Housing Corporation. All of the public housing units have been constructed under the Rural Housing Program which is a Federal/Provincial Program administered by Saskatchewan Housing Corporation. In terms of the mortgages on single family homes administered by the Corporation, approximately 90% are in arrears and only 50% to 75% of homeowners are making regular monthly payments. However, Saskatchewan Housing Corporation officials consider Buffalo Narrows to be one of the better northern communities for mortgage repayment.

As a result of the high levels of unemployment, high home operating costs and mortgage repayment difficulties, the Corporation has begun to recognize the need to provide more rental housing units and fewer for sale units. Construction is currently underway on 8 multiple family rental units.


BUFFALO NARROWS
map 1
residential lot supply
VACANT VILLAGE OWNED
VACANT VILLAGE OWNED - LOW
VACANT/PARTIAL USE / PRIVATE
POTENTIAL INFILL AREAS
FUTURE HOUSING AREA
LAGOON
CHURCHILL LAKE
JULY 1986

RESIDENTIAL LOT SUPPLY

The future ability of the Village to provide a constant supply of residential lots to meet the demand will depend on several factors; the current supply, the type and land use density of new housing units (single family vs multiple family units), the potential for creating new infill lots, and the potential for creating new lots by outward expansion.

The updated, Residential Lot Supply - Map 1 on the facing page shows the residential lot supply in the Village and the areas with potential for new residential development.

The following table summarizes the current supply of residential lots by general location, type of lot, ownership and whether they are unserviced or serviced with sewer and water.

TABLE 9

Vacant Residential Lot Summary

Lot Description	Unserviced		Serviced
	Kisis Channel	Sawmill Bay	Main Village
Vacant Village Owned			16
Vacant Village Owned - Low	14		30
Vacant Partial Use Privately Owned	3		11
TOTALS	17	Nil	57

Source - Northern Village Office, Buffalo Narrows.

While table 9 shows 46 village owned serviced lots available for development, 30 of these or 65% are moderate to very low lying and will require special design solutions if they are to be developed for housing. The conventional approach of adding fill to raise the surface of the lot is not considered practical for most of these lots.

Of the 11 privately owned serviced lots, approximately one half of them are being used in conjunction with houses on adjacent lots for gardens, garages or driveways and may not be available for sale for new housing.

The only other source of vacant lots in the Village are 17 unserviced lots along Kisis Channel. However, the extremely high cost of extending services to this area combined with the flood risk make many of these lots unsuitable for new housing.

The Village Administrator estimates the annual demand for serviced residential lots at 6 to 10 based on past experience. At this demand rate there is a two year supply of town owned serviced lots available, and a three to five year supply of low town owned serviced lots requiring fill or special design considerations.

In the years ahead the Village will be faced with a choice between undertaking the costly expansion of new serviced subdivisions along the perimeter of the Village or finding ways to encourage new housing construction on the 11 privately owned serviced lots and the 30 low lying village owned serviced lots. With current lot prices remaining artificially low along with property taxes there will be little incentive for owners of privately held vacant residential lots to put them on the market.

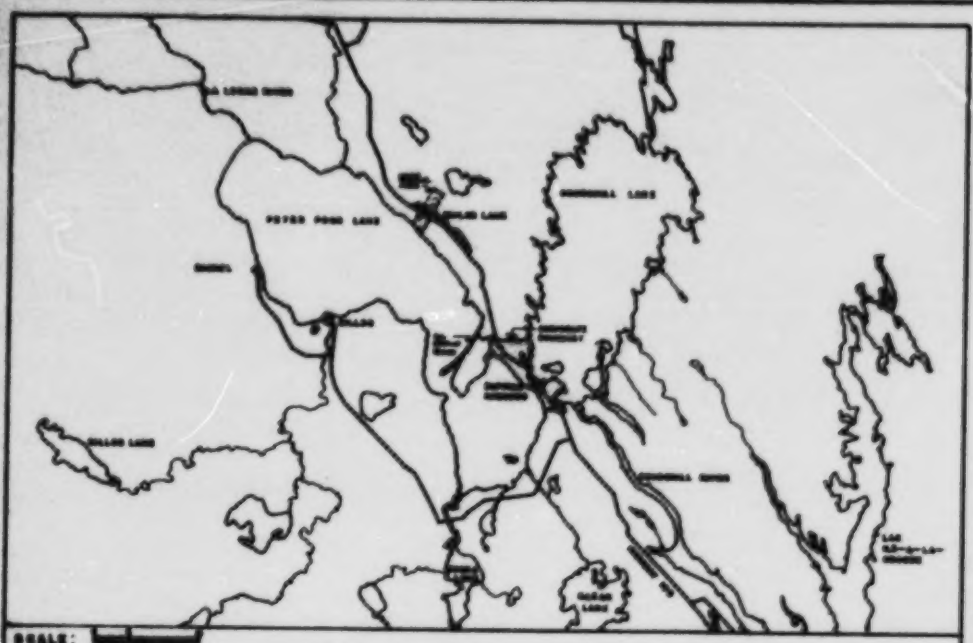
However, if the 30 low lying village owned lots could be developed this could delay the need for new subdivisions. Clearly, more innovative housing design methods are needed to utilize the lower lots. An action plan illustrating several design methods for these lots is included in this report.

In addition, there are a number of opportunities for developing other vacant lands adjacent to existing services that should be explored by the Village. The preceding map shows the residential lot supply in the village and indicates those areas with potential for infill residential development utilizing existing underground services. Also shown is the area west of the settlement along the old airstrip that has potential for new residential subdivisions by extending existing underground services to them.

Several action plans indicating how multiple family housing units could be developed on sites with potential for infill using existing underground services are included in this report. By directing most of the future multiple family accommodation to low lying lots or those with infill potential and retaining the higher, serviced lots for single family housing, the Village could substantially delay the need for costly outward subdivion expansion.

PART III — PLANNING SECTION

BUFFALO NARROWS



SCALE:

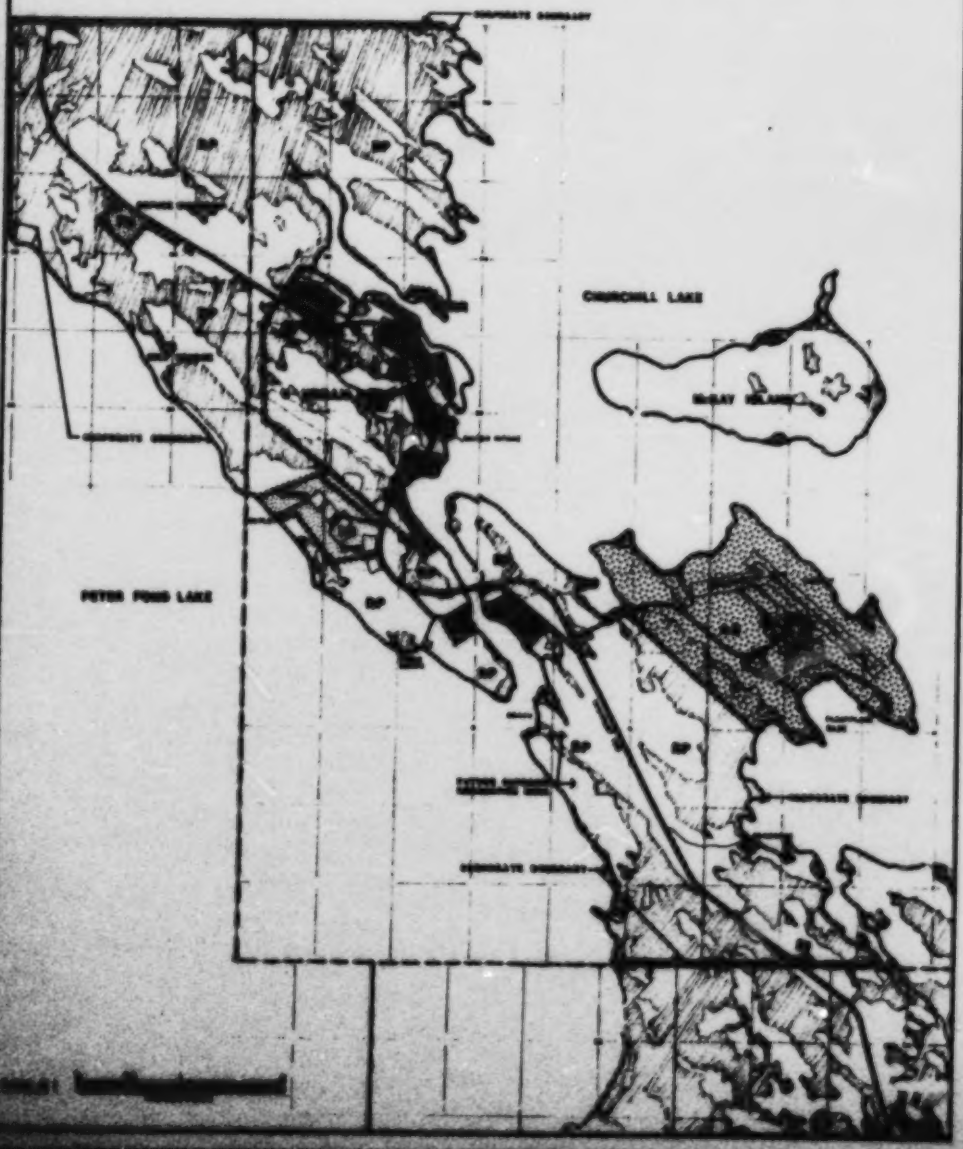
map 2
rural land use

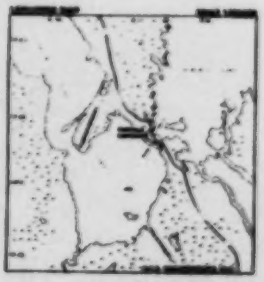
LAND CAPABILITY FOR DEVELOPMENT

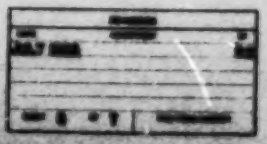
- WETLANDS - UNSUITABLE
- UPLANDS - SUITABLE

PROPOSED LAND USE ZONES

- REC — RECREATION PARK
- RR — RURAL RESIDENTIAL
- AD — AIRPORT DISTRICT
- PU — PUBLIC UTILITY
- U — URBAN AREA







RURAL PLANNING AREA

BACKGROUND

The 1978 planning study by Amisk described existing terrain conditions, identified the suitability of rural areas for various land uses, and proposed a boundary and rural zoning districts for an area 7 miles long by 4 miles wide around the settlement. Subsequent to that study, Community Planning Branch prepared a Zoning District Map as part of Zoning Bylaw No. 5/80 that designates permissable land uses for all lands within the corporate boundaries. Since that map was prepared there have been a number of developments and amendments. All of this information has been reviewed and incorporated with new information on the Rural Land Use Map. This will form the basis for revising the existing Zoning Bylaw.

RURAL LAND USE - MAP 2

The upper drawing shows land uses outside the corporate boundaries including highways, communities, Indian Reserves, and tourist and recreation facilities.

The lower drawing has been reproduced from the Amisk report and shows the following information:

1) Township and section boundaries (unsurveyed).
2) Corporate boundary of the Northern Village of Buffalo Narrows.
3) Land capability for development - wetlands are unsuitable.
   - uplands are suitable.
4) Lands already developed for village and regional needs.
5) Proposed land use zones within village boundaries including the following:

RP - Recreation Park - This zone would allow the following uses: parks, golf courses, trail development, playgrounds, picnic and campgrounds, land use buffers, and commercial and institutional activities that meet the outdoor recreation objectives of this zone.

RR - Rural Residential - This zone would allow the following uses: single family dwellings, small scale agriculture and home occupations. In general, these areas would not be connected to underground municipal services.

AD - Airport District - This zone would allow the following uses: aircraft runways, repair, storage, base offices, and residential facilities associated with air transportation.

PU - Public Utility - This zone would allow the following uses: sewage lagoons, refuse disposal, and transmitter towers.

BUFFALO NARROWS

SCALE 1:5 000

map 3

terrain conditions

SUITABILITY FOR DEVELOPMENT

TYPE 1 [illegible] UPLANDS SUITABLE

TYPE 2 [illegible] WETLANDS UNSUITABLE

TYPE 3 OPEN WETLANDS UNSUITABLE

LOCATION MAP

SOURCE:

BASIC URBAN AFFAIRS - 1981 AERIAL PHOTOGRAPHY

AS MILLARD & ASSOCIATES - 1973 TERRAIN STUDY

REVISIONS		
DATE	AMENDMENT	BY

SHEET 3 OF 7

U - Urban - This zone would allow the following uses: residential, commercial, institutional, industrial and recreational activities.

URBAN PLANNING AREA

BACKGROUND

The Amisk study described existing terrain, infrastructure, land use, flood hazards and land ownership in the urban area. Many of the original study maps have been updated for this report and are included in this section along with a proposed new Urban Land Use Map. This last map proposes various land use zones for the urban area and will form the basis for revising the existing Zoning Bylaw.

TERRAIN CONDITIONS - MAP 3

This map is derived from June 1981 aerial photography provided by Community Planning Branch. The terrain analysis is based on a study done by J. D. Mollard and Associates Ltd. in 1973.

A unique feature of the village is the long shoreline and views of Churchill Lake from residential and business areas of the village. The shoreline conditions vary from wetlands to sandy, stony uplands. A major factor limiting development in the village is the high water table and large wetlands (muskeg) areas. The water table on the higher, well drained upland areas often occurs within 2 to 3 meters of the surface. Near the edge of upland areas, the water table often occurs within 1 to 2 meters of the surface (Associated Engineering Services Ltd., 1981).

Upland areas are characterized as higher, better drained, densely treed areas with grey wooded to sandy soils underlain by stony till and sand. Tree cover includes aspen, birch, jackpine and white spruce. These areas are considered suitable for development.

Wetland areas are characterized as low, poorly drained, sparsely treed areas with peat soils and the water table at or near the surface. Tree cover includes black spruce, tamarack and willows. These areas are generally considered unsuitable for development.

Development on Wetlands

While most development in the village is confined to the upland areas there has been an increasing tendency in recent years toward landfill of wetlands in order to create new land for building development. While some landfill of lower

lots in the residential areas has occured, most of the activity has been in the central business district. A number of new buildings have been constructed on these filled wetlands using conventional strip footings or post and pad foundations with good results. However, the depth of peat in the wetlands varies from shallow to very deep depending on the location in the village.

The chief problems to be encountered when constructing buildings on peat is settlement and a high water table. For any particular site, a geotechnical study is a prerequisite to determining the cost in advance of construction. The drainage characteristics, depth and physical characteristics of the peat and any underlying soft organic soil must be determined.

A number of methods of building on peat soils are available (MacFarlane, 1969, p. 220).

1) Site preloading - This method has been used in the village and consists of adding mineral soil fill over top of the peat. Settlement occurs over time before building construction is begun using conventional strip footings.

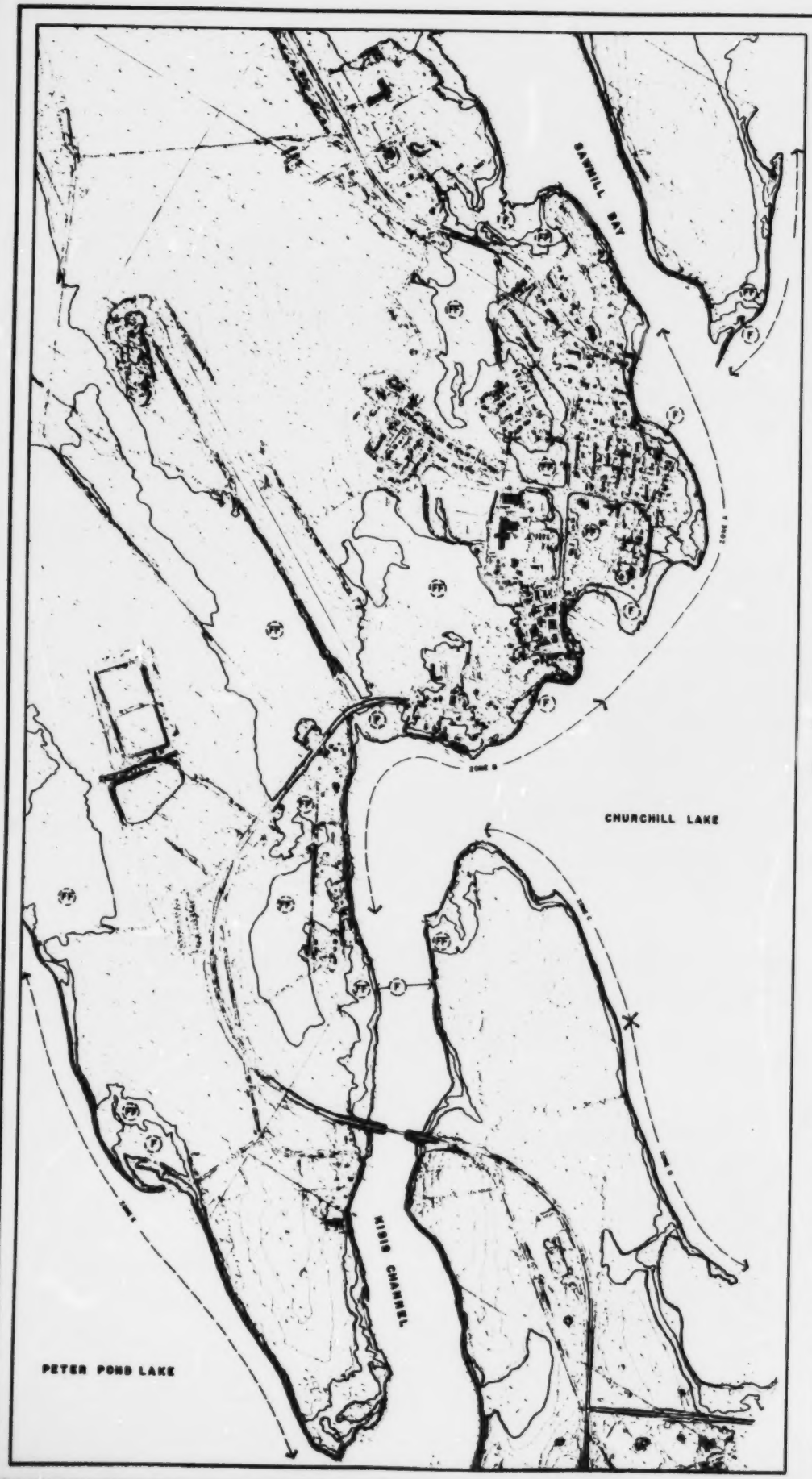
2) Removal of peat and backfilling with granular fill - This method is feasible when the peat is shallow (up to 2.4 meters deep) and underlain by firm mineral soil. Construction can be undertaken using conventional strip footings.

3) End bearing piles - This method is commonly used for deep peat deposits and for heavy structures. The peat is bypassed structurally and the building is supported on piles bearing on rock or till below the peat.

4) Friction piles - This method is advisable only for light buildings in very deep muskeg. The load on the pile is transferred to the soil through skin friction. Driven, pressure treated wood piles are often used for these conditions.

Using any of these methods it may be possible to successfully develop low lying muskeg areas within the village although the high water table may make installation of underground services difficult.

BUFFALO NARROWS



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map 4
flood plain

(F) FLOOD ZONE

(FF) FLOOD FRINGE ZONE

COMBINED WIND SET-UP AND WAVE RUN-UP

ZONE A — 0.22M

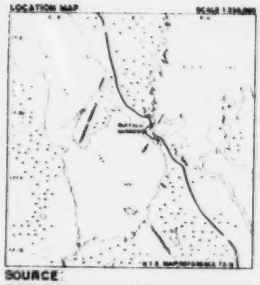
ZONE B — 0.32M

ZONE C — 0.90M

ZONE D — 0.24M

ZONE E — 1.68M

LOCATION MAP



SOURCE:
Canada-Saskatchewan Flood Damage Reduction Program
Saskatchewan Environment

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DATE	ASSESSMENT	BY

SHEET 4 OF 7 FILE INDEX NUMBER

FLOOD PLAIN - MAP 4

Background

This map is derived from topographic maps prepared from October 1980 aerial photography under the auspices of the Canada-Saskatchewan Flood Damage Reduction Program (F.D.R.P.). It replaces the topographic map used in the Amisk study and is of superior quality and accuracy. While final flood level mapping is not available for Buffalo Narrows at this time, preliminary flood level values have been provided by Saskatchewan Environment, Hydrology Branch, using techniques similar to the F.D.R.P. approach. This preliminary information has been incorporaged in the Flood Plain map and is subject to future revision by the F.D.R.P.. When the flood hazard areas have been finally identified and designated under F.D.R.P., senior government funding of all new flood prone projects within the designated flood hazard areas will be limited to those that are flood proofed.

After review of flood plain management regulations and bylaws in other jurisdictions (for example Moose Jaw, Sask.), and discussions with Saskatchewan Environment officials, we have prepared the Flood Plain map and proposed zoning controls for the hazard zones indicated.

Flood Hazard Lands

An important factor limiting development in the Village are the large areas of flood prone lands. The developed areas prone to flooding include; sewage pumping stations #1 & #2, most of the Kisis Channel subdivision, part of the Central Business District, part of the Morin and Green Avenue subdivisions, all of the office building strip along Pederson Avenue, a residence at the end of Bay Street and portions of the Sawmill Bay subdivision and Industrial area. In addition, most of the wetland areas within the Village are flood prone if flood waters were to bypass the existing dyke roads.

The Flood Plain Map shows two contour lines which indicate the edge of two flood hazard zones based on still water levels:

Flood Zone - All shoreline lands below elevation 421 M are included in this zone. The probability of flooding in any one year is 1 in 25. Maximum recorded water levels on Churchill Lake have nearly met this elevation in 1974 and 1954 at 420.9 M.

Flood Fringe Zone - All lands below elevation 422 M and above elevation 421 M are included in this zone. The probability of flooding in any one year is 1 in 100. Maximum estimated water levels on Churchill Lake have nearly met this elevation in 1902 at 421.9 M. (Hydrology Branch have estimated a higher value of 422.9 M for those lands with a probability of flooding in any one year of 1 in 500. However, because of the preliminary nature of these figures, this higher elevation and zone have not been included on this map.)

In addition to the still water levels estimated for each flood prone zone, the shoreline is subject to increased water levels resulting from wind set-up and wave run-up. An estimate of the combined effect of set-up and run-up for the various beach slopes has been prepared by Hydrology Branch. Shoreline zones A & B could have water levels increased by 0.22 M to 0.32 M respectively under a 65 km/hr wind along the critical fetch distance. Shoreline zones C & D could have water levels increased by 0.9 M and 0.24 M respectively under the same conditions. Shoreline zone E could have water levels increased by 1.68 M under similar conditions.

High still water flood levels combined with wind set-up and wave run-up could have devastating effects on developed parts of the Village in future years. There is a need to floodproof existing buildings in all flood prone areas and either prevent new building development in flood prone areas or ensure that all new construction is designed to minimize damage from flooding.

Development in Flood Prone Areas

Because of the high risk of damage in the Flood Zone, future development should be limited to park, recreation or other uses that would incur a minimum of damage from flooding. Building development should be limited to those conforming to the bylaw and only allowed if designed and constructed in a flood proofed manner. Existing buildings in this zone could be flood proofed or relocated over time.

Because of the moderate risk of damage in the Flood Fringe Zone, future developments should be designed and constructed as floodproofed structures. The interim Design Flood Level for this area should be elevation 422 M and all building design drawings and survey plans should make reference to this level. All new buildings constructed in this zone should be designed by a registered architect or engineer, licenced in Saskatchewan, to ensure that adequate safeguards for foundations and walls under flood conditions are incorporated. Existing buildings in this zone should be flood proofed or relocated over time.

Flood Proofing Alternatives

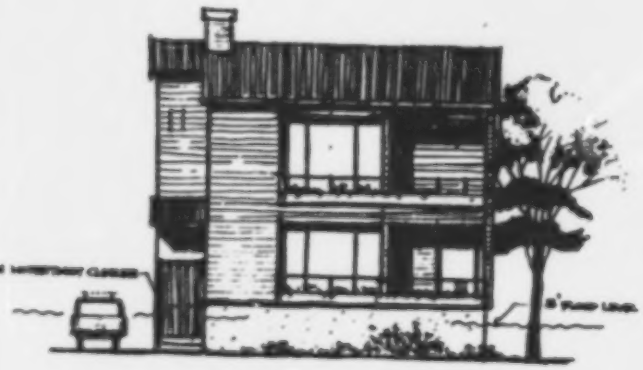
According to several recent studies, flood proofing buildings can be an effective and economical alternative to large scale measures such as dykes. Flood proofing alternatives include:

a) Earth fill up to or above Design Flood Level. This applies to new buildings only.

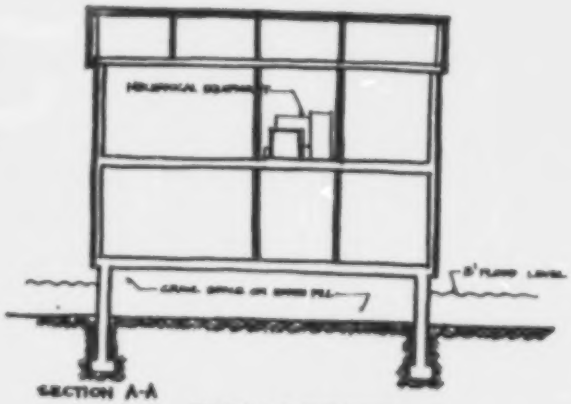
b) Elevating foundations using posts, piles, piers or walls above Design Flood Level. This applies to new and existing buildings, particularly residential buildings.

FLOODPROOFED RESIDENCE

RESIDENTIAL UNIT – DETACHED OR SEMI-DETACHED
ELEVATED ON ABOVE GROUND
EXTENDED FOUNDATION WALLS



FRONT ELEVATION

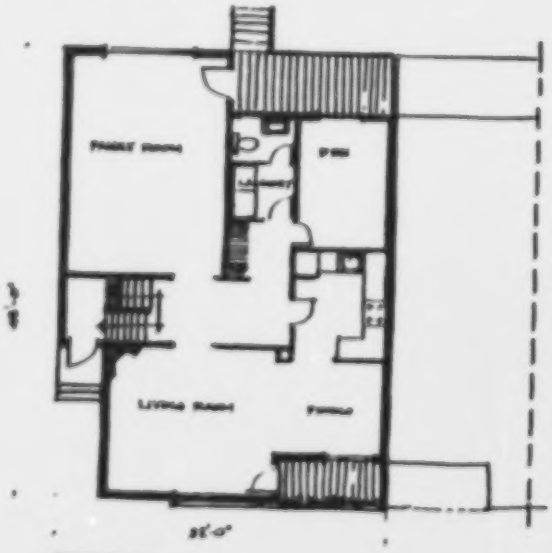


SECTION A-A

SCALE :

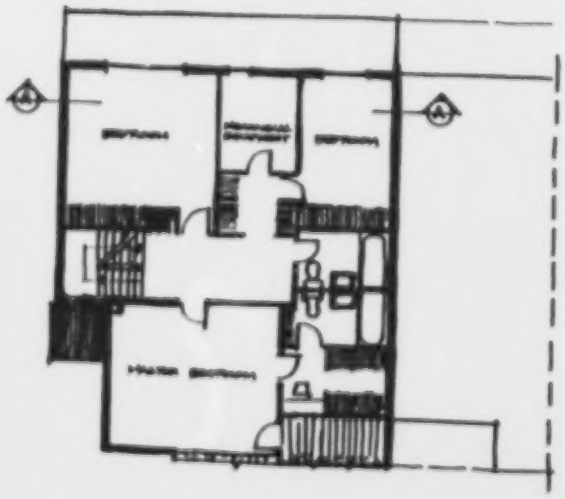
RESIDENTIAL UNIT – DETACHED OR SEMI-DETACHED

- ELEVATED ON ABOVE GROUND REINFORCED CONCRETE EXTENDED FOUNDATION WALLS - NO BASEMENT
- ALL EQUIPMENT, STORAGE AND FACILITIES ABOVE THE FLOOD WATER LEVEL.



FIRST FLOOR

- ZONE OR STAGGERED SPLASH PARABOLA
- PARKING ALTERNATIVE FOR GARAGE DOOR. THE LARGE-DOTTED POWER AREA WITH CROSS-HATCHING BY EXTENDED STAIR.
- GARAGE CAN BE PLANNED WITHOUT DAMAGE TO THE HOUSE.



SECOND FLOOR

SCALE :

Plate 10

c) Watertight closures and seals using flood shields over doors and windows, closure of service corridors, sealing of all joints, operation of sump pumps, etc. This applies to new and some existing buildings.

d) Flood walls or earth berms constructed around buildings to an elevation above the Design Flood Level. This applies particularly to existing buildings.

e) Elevating electrical and mechanical equipment above the Design Flood Level and using waterproof materials below this level. This may apply to existing and new buildings.

In general "the cost of flood proofing new structures is usually less than for existing buildings for the simple reason that the flood damage reduction modifications can be designed and built right in with the building from project initiation" (MacLaren J. F. Ltd., p. 2, 1978). Case studies by MacLaren show that flood proofing costs as a percentage of building value range as follows:

a) single family homes range from 2% to 12% for new buildings and 11% to 50% for existing buildings

b) commercial retail buildings range from 6% to 16% for new buildings

c) multi-storey buildings range from 3% to 7% for new and existing buildings

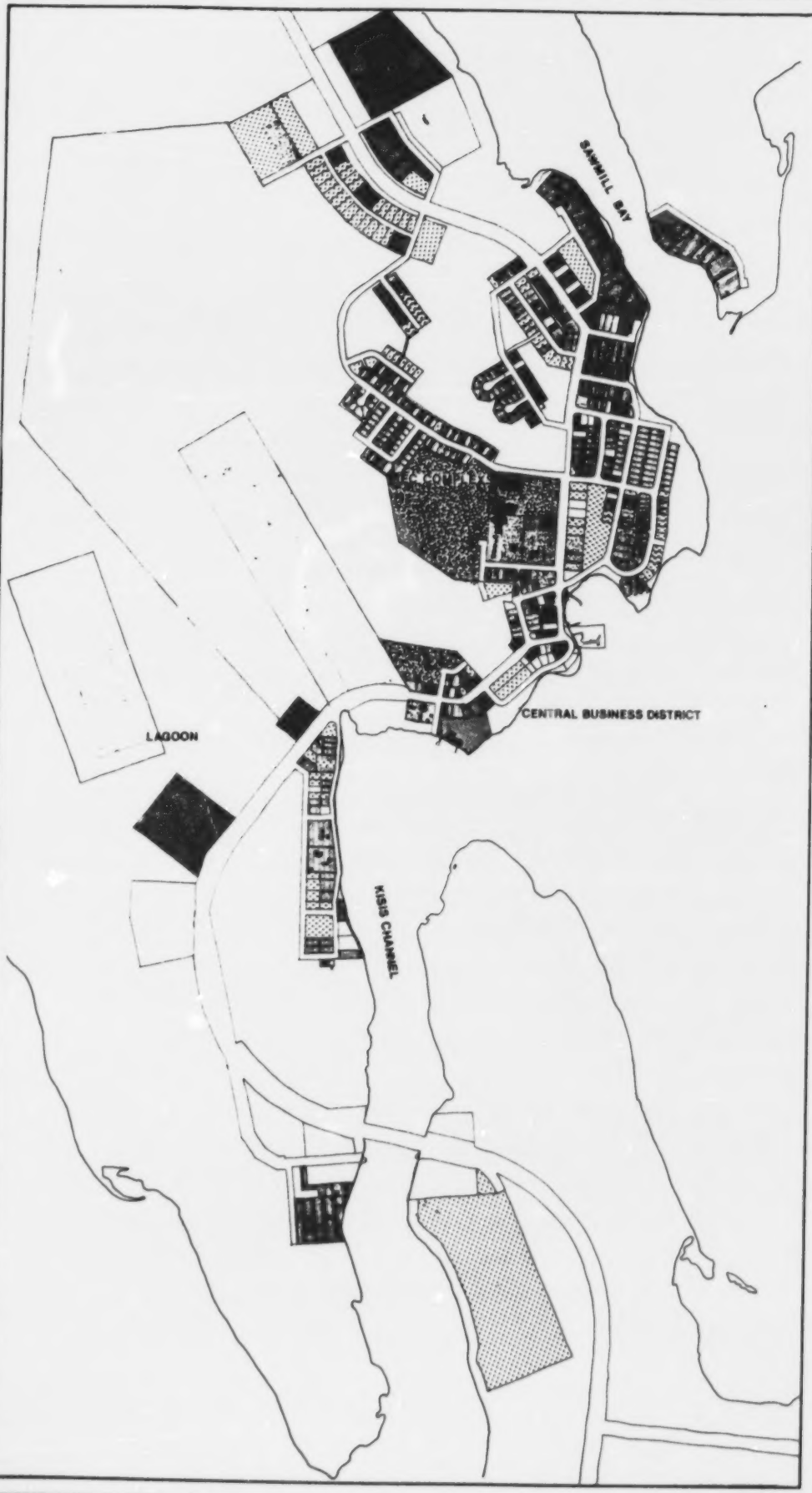
d) industrial buildings range from 2% to 4% for new and existing buildings.

An example of a new flood proofed residential unit from the MacLaren study is shown on the facing page.

Current Regulations

Canada Mortgage and Housing Corporation has included in their Technical Builders Bulletin Supplement T5, a section on requirements for construction in flood fringe areas. Included are requirements for footings and foundations, backfill, other foundation support systems, floor construction and clearance above the Design Flood Level, anchorage to foundations and basement or cellar drainage systems. The Design Flood Level is defined as not less than the 1-in-100 year event.

The City of Moose Jaw has a bylaw governing development within the Floodway and Flood Fringe Zones. New buildings in undeveloped areas are required to have the first floor elevation 0.5 metres above the Design Flood Level (1-in-500 year event). New buildings in developed areas are required to elevate plumbing outlets, electrical panels and heating equipment 0.5 metres above the Design Flood Level and require an architect's or engineer's stamp on the building plans. Moose Jaw has designated flood hazard areas mapped under the F.D.R.P.

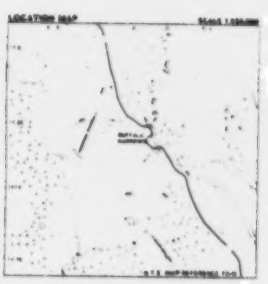


BUFFALO NARROWS

SCALE 1:5 000

map 5
existing land use

- HOUSING
- GENERAL COMMERCIAL
- INDUSTRIAL
- INSTITUTIONAL
- RECREATIONAL
- VACANT
- TOWN OWNED VACANT



Compiled in February 1979 by

REVISIONS		
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JULY 1980		PC

SHEET 5 OF 7

EXISTING LAND USE - MAP 5

This map has been updated with new subdivision and land use information that has occurred since 1978. Seven categories of existing land uses are shown including vacant lots and town owned vacant land. While reduced in number since 1978 there continue to be a number of land use conflicts in the Village. These are discussed by general location as follows:

Central Business District

This area contains several uses that conflict with the commercial character of the area and hamper commercial expansion. A total of 11 lots are occupied by single family homes, there are several warehouses and a municipal garage that occupy land suitable for commercial or institutional development. The float plane base continues to operate from this area, close to businesses and the Village water intake and would be better located in the airport zone.

In general this area is underdeveloped with wasteful land uses and a total of 13 vacant lots, most of which are flood prone or located on peat soils.

Highway 155 passes through this area and brings truck traffic often transporting hazardous goods, into the Central Business District. A particularly hazardous right angle turn in the highway brings truck traffic to the shoreline. A truck accident at this congested location could threaten nearby commercial buildings, aircraft and the Village water supply.

Institutional Area

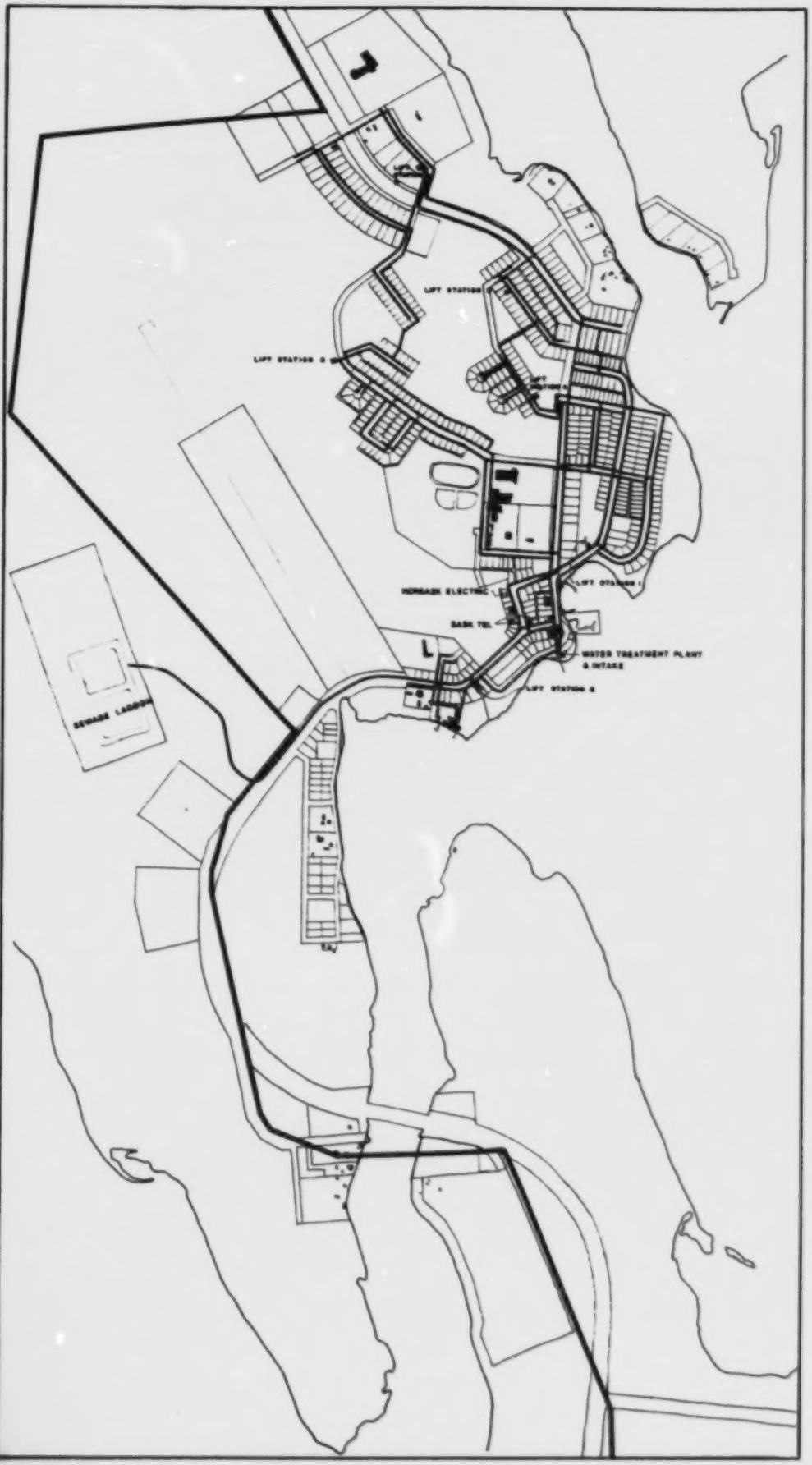
This area includes the school, arena, nursing station and office strip along Pederson Avenue. The teacherages located south and east of the school and the mobile home park east of the school are unsuitable land uses in this area. The mobile homes and residences should be relocated to residential subdivisions and the land preserved for a hospital and future school expansion or related uses.

All of the lots along the east side of Pederson Ave. are flood prone and will require flood proofing measures.

Residential Areas

A helicopter base is located at the south end of the Sawmill Bay residential subdivision and would be better suited to a location in the airport zone.

BUFFALO NARROWS



SCALE 1:5 000

map 6
existing utilities

- SEWER LINES
- WATER LINES
- POWER TRANSMISSION LINE

JULY 1980 SERVICES

EXISTING UTILITIES - MAP 6

This map has been updated from the 1978 Amisk study with the extensions of sewer and water systems into the north west part of the Village. In addition, a number of changes to the water system have been included as a result of line abandonments.

Electrical Supply

The main 72 K.V. electrical supply line from Meadow Lake follows the highway to a substation near the airport road south of the Village. A 25 K.V. line services Buffalo Narrows, La Loche and Turnor Lake further north.

Water and Sewer System

The sewer and water system was first completed in 1976 and was among the most expensive systems installed in northern Saskatchewan communities because of the high water table and difficult terrain conditions. The system was plagued with freeze-ups and operating problems during the first years of operation and major changes were made particularly to the water system. A large number of abandoned lines remain buried throughout the Village.

The system has operated at a deficit since its installation. In 1983 the annual operating deficit was $44,204, and in 1984 it was $28,000, but an increase in fees is expected to reduce it to less than $20,000 in 1985.

The map on the facing page shows that most of the community is serviced with the exception of residential subdivisions on the north east and south edges of the Village. Sewage is pumped from lift stations #1 & #2 to the aerobic lagoon located southwest of the Village. The second cell is emptied twice a year via an outlet to Peter Pond Lake. Water is drawn from Churchill Lake into the water treatment plant in the Central Business District and distributed via a recirculating piped system throughout the Village.

Both the lagoon and the water plant are inadequately sized for present community needs and expansion of each is planned in the near future. A recent engineering study by W. A. Bullee Consulting Ltd. indicates an abnormally high water consumption of 140 gallons per capita per day in the Village. This is about 60% higher than similar sized southern communities and is attributed to system loss through leakage and the local practice of continuous bleeding to prevent freezing by homeowners. Homeowner education and water meters are suggested remedies.

Unserviced Subdivisions

A recent survey of the unserviced residential areas at either end of the Village by the Public Health Inspector revealed the information in the following table.

TABLE 10

Individual Water and Sewer Systems in Unserviced Residential Areas

Number of Homes	% of Total	Drinking Water Source	Method of Sewage Disposal
4	17%	Well (1)	Holding Tank (5)
3	13%	Pumped in Lake Water (2)	Holding Tank (5)
4	17%	Hauled From Municipal Source (3) and Hauled From Lake	Privy (6)
12	52%	Hauled From Lake (4)	Privy (6)
1	1%	Hauled From Lake (4)	Chemical Toilet
23	100%	TOTAL	

Source: M. Trochimchik - Public Health Inspector.

(1) Well water samples high in nitrates - unsafe for infants.
(2) Water pumped in from deep intakes tested satisfactory.
(3) Danger of contamination of municipal system water during hauling and by containers.
(4) Lake water from shoreline tested unsatisfactory - must be boiled or chlorinated.
(5) Report mentions unsubstantiated reports of homeowners not making regular holding tank pumpouts contrary to Shoreland Pollution Control regulations.
(6) Report mentions outdoor privies located on land with a high water table contaminating ground water contrary to Shoreland Pollution Control regulations.

This table shows that the majority of residents (70%) in the unserviced areas haul water by hand from the lake and use outdoor privies. Only 30% of residents have modern plumbing systems with water pressure tanks and sewage holding tanks. The health and environmental hazards resulting from using lakeshore water and outdoor privies are evident. Clearly some immediate improvement of these conditions is necessary.

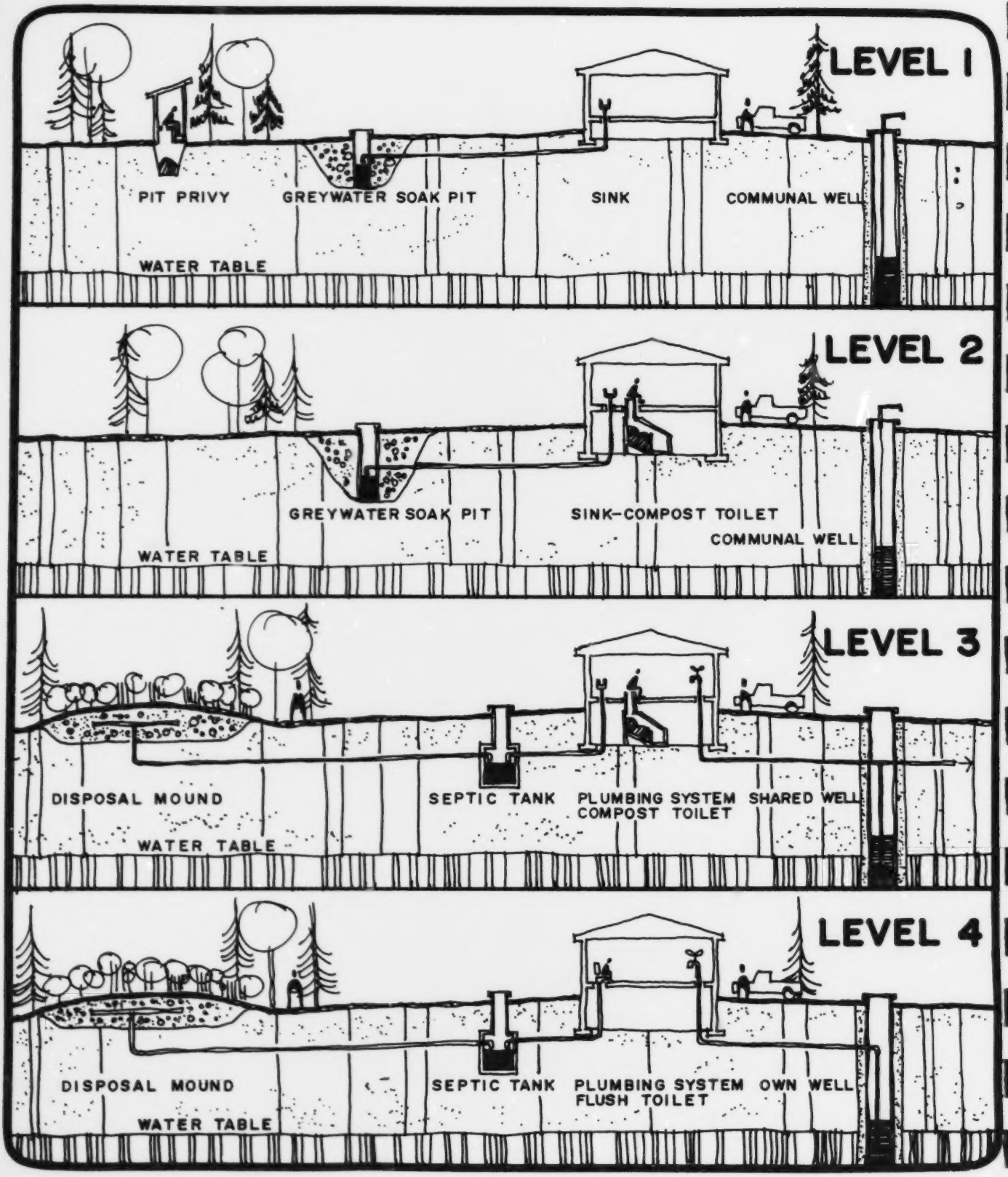
Kisis Channel Sewer and Water Study

A number of engineering reports, in 1980, 1983, 1984 and 1985 have been prepared for the Kisis Channel subdivision examining the feasibility of extending sewer and water services to this area. The most recent studies by the Saskatchewan Water Corporation examined several servicing alternatives. The results of these studies are summarized in the table below. While there are 20 homes in the subdivision, only 14 of them are considered to be of a high enough standard to service. The engineering study evaluated the servicing of a potential 56 or 71 residential lots and assumed that all lots would be filled and flood proofed. However, because of a wetland area located in the subdivision it is unrealistic to consider developing all of the potential lots. We have assumed that 20 lots are developed and the potential for developing another 20 to 30 exists by subdividing larger parcels.

TABLE 11

Summary of Servicing Alternatives for Kisis Channel Subdivision

Alternative Systems	Capital & 10 Year Operation and Maintenance Cost	Cost per Lot/20 Lots	
		Capital and Operating/10 Yrs.	Capital Only
1) Piped Municipal Water Supply to Each Home Combined With:			
a) Sewage Holding Tanks - Trucked	$505,600	$25,280	$18,000
b) Low Pressure Piped Sewage System Grinder Pump Type	$723,000	$36,150	$31,638
c) Gravity Piped Sewage System	$1,000,000	$50,000	$49,885
2) Piped Municipal Water Supply to a Water Point In Subdivision For Hauling Water Combined With:			
a) Sewage Holding Tanks - Trucked	$476,000	$23,800	$ 4,268
3) Piped Well Water Supply Shared by Four to Five Homes Combined With:			
a) Low Pressure Piped Sewage System Grinder Pump Type	$553,000	$27,650	$21,108
b) Low Pressure Piped Sewage System F.F.I.B. Type	$453,000	$22,650	$17,528



INDIVIDUAL SEWER & WATER SYSTEMS

Sources: 1984 & 1985 Feasibility Studies prepared by Saskatchewan Water Corporation and telephone communication with S. Kahn, Municipal Engineer S.W.C..

The cost of installing and operating the systems over a 10 year period ranges from $22,650 per lot to $50,000 per lot. This is considerably higher than the $8000 to $10,000 per lot cost over a 10 year period for the proposed old airport subdivision. Financing the cost of the various alternative systems would be shared between homeowners and the Village. The capital and operating costs of all equipment and installations within the lot lines would be the responsibility of the homeowner, and the Village would be responsible for everything installed on street right of ways.

The high capital and/or capital and operating costs for the systems proposed may be difficult for the Village and homeowners to finance without significant provincial government assistance.

All of the sewage collection systems examined in the engineering studies are based on using water to transport human wastes from the home where they are produced to a distant sewage lagoon. Missing from the analysis are on site treatment and waste disposal alternatives. Because of the low housing density and large lots along Kisis Channel, individual sewage systems may be more cost effective and feasible than the municipal alternatives currently proposed. In a recent study for rural residential development at La Loche, four systems are under consideration for rural homes and two of them may be applicable to the Kisis Channel area.

Level Two System includes a municipal well water point for hauling water combined with a grey water soak pit and interior composting toilet for each home. The capital cost of this system ranges from $2000 each for an owner built composting toilet to $6000 each for a contractor installed system.

Level Three System includes a piped well water supply shared by two homes combined with a grey water septic tank and mound and interior composting toilet for each home. The capital cost of this system ranges from $6,900 to $10,400 for an owner built composting toilet and contractor installed system respectively. (Pineridge, Feb. 1985, p. 22).

Individual on site waste disposal methods should be studied by the Village for the Kisis Channel area to determine their feasibility because of the high costs of the municipal systems.

Sawmill Bay Subdivision

Most of the homes in this area are situated on large lots (1½ to 2 acres) fronting both sides of Sawmill Bay, and have private wells and sewage holding tanks or privies. The subdivision on the west side of the bay is located near the existing sewer and water system on Pederson Avenue but is about 5 M below the avenue. A lift station would be necessary for the installation of a gravity sewer system and would be very costly because of the large lots and few homes in this area. A low pressure sewage system may be less expensive but would have higher operating costs. No detailed engineering study of this area has been undertaken to date. Individual on site waste disposal methods should be studied for this area as well as Kisis Channel area, as possible alternatives to more costly municipal systems.

Development Options

The Village is currently faced with difficult conditions with regard to meeting the demand for extending sewer and water services to the unserviced community fringes; the capital costs are high, there are relatively few homes located in these areas, lots are large and housing densities low, other parts of the community can be developed and serviced more economically and the municipal sewer and water system is already operating at a deficit.

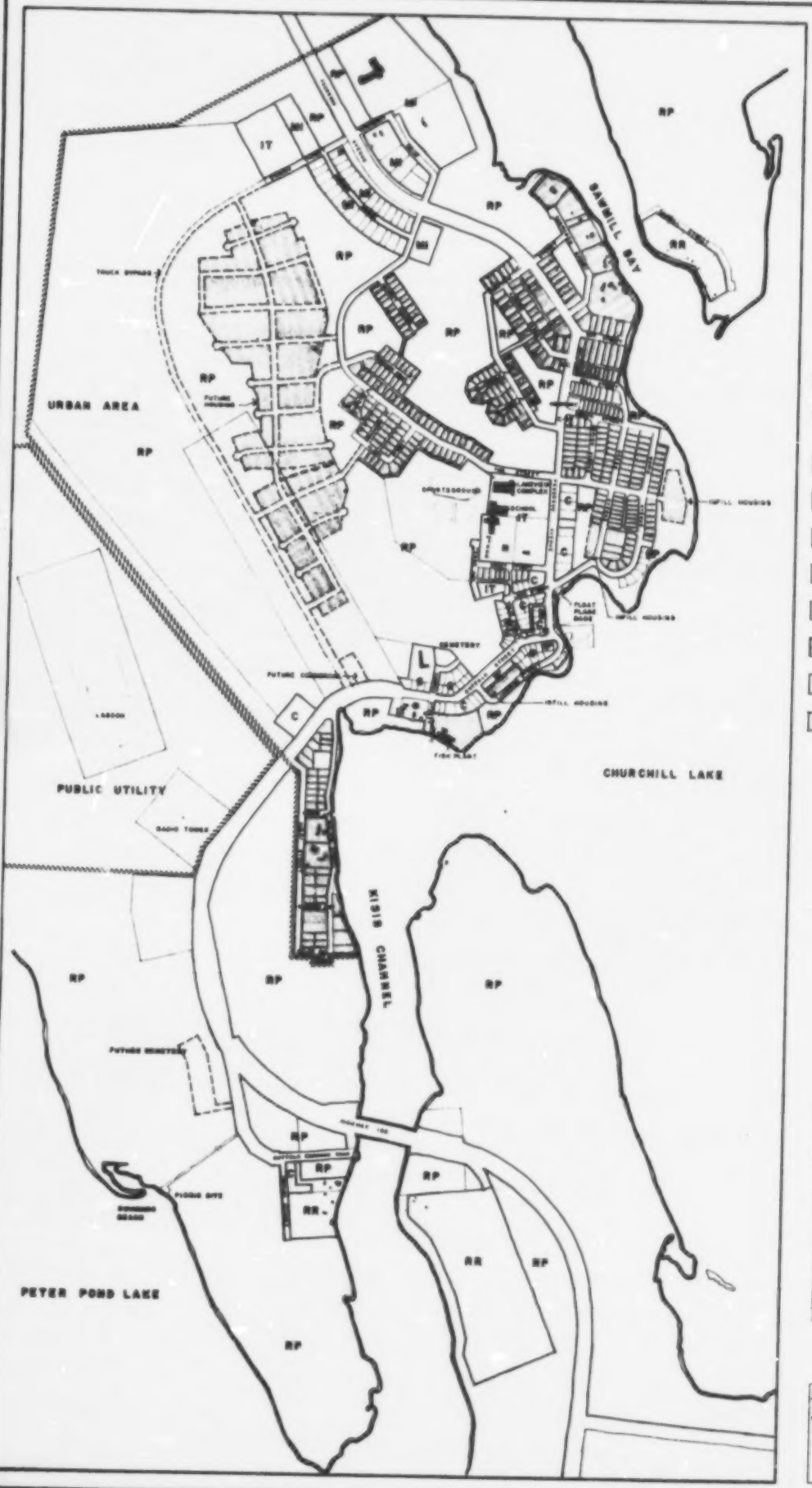
Several scenarios require discussion, and they include:

1) Extend municipal services to these areas and cost share with the homeowners and the province. Then in order to improve the utilization of the system, encourage more housing development in these areas in an effort to increase housing density.

2) Don't extend municipal services to those areas, rezone them as rural residential and require that homeowners be responsible for installing their own sewer and water systems.

3) Same as (2) but the Village and province provides a retroactive capital grant to all existing homeowners to assist them with installing or upgrading individual sewer and water systems.

4) Same as (2) but the Village undertakes an individual waste disposal pilot project to test on-site waste treatment and disposal methods for a limited number of homes. If the systems are determined to be feasible assistance is provided to additional homeowners.



BUFFALO NARROWS

map 7

proposed urban land use

- RESIDENTIAL
- C COMMERCIAL
- MI INDUSTRIAL
- IT INSTITUTIONAL
- RP RECREATION & PARK
- SHORELINE BASED LAND USES
- RR RURAL RESIDENTIAL
- PU PUBLIC UTILITY

REVISIONS		
DATE	AMENDMENT	BY
JULY 1980	SUBDIV. ZONING	P.C.

SHEET 7 OF 7

PROPOSED URBAN LAND USE - MAP 7

Background

This map is derived from the compiled subdivision plans and has been updated with new survey information. It shows the serviced urban area and indicates how land uses within and surrounding this area should be organized in future years. The plan attempts to make the best use of land within the opportunities and constraints of the natural and man made features. The goal of the plan is to develop a more pleasant, efficient and convenient community, and this map will serve as the basis for revising and updating the existing Zoning Bylaw.

Truck Bypass

An important feature of this plan is the proposed truck bypass which will divert hazardous goods and heavy truck traffic around the west side of the Village. There will be limited street access to the bypass from future residential subdivisions and a treed buffer strip will shield most of the residential areas from vehicle noise.

Residential

The residential zones include existing residential areas, areas with potential for infill and future expansion areas. Permitted uses include single and multiple family housing units. A conceptual plan for up to 260 future residential lots is shown to the west of the existing subdivisions. The future subdivisions have been designed to optimize the opportunity for solar orientation of buildings on each lot by ensuring that the major windows of every housing unit can face slightly south east. Energy savings from passive solar gains in homes can reduce space heating costs from 25% to 50% depending on home construction.

Commercial

The commercial zones include most of the land within the Central Business District and an area with development potential at the junction of the proposed truck bypass and Highway 155. Permitted uses include many kinds of commercial establishments as well as a number of institutional uses. Residential development would be excluded from these areas except for second floor dwelling units above commercial establishments. Existing residential development would become non-conforming uses and could not be upgraded or replaced.

Industrial

The industrial zones are located in well defined areas that include the existing light and heavy industrial subdivisions at the north edge of the community. Permitted uses include machine shops, warehousing, bulk stations and storage and repair facilities that require some isolation from residential districts.

Institutional

The institutional zones include existing institutional development and areas with potential for future development. Permitted uses include educational, religious, security, cultural and medical institutions, government offices and cemeteries. Existing residential buildings such as teacherages, and mobilehomes would become non-conforming uses and could not be upgraded or replaced.

Recreation and Park

The recreation and park zones include existing and proposed outdoor recreation facilities, shoreline and wetland areas not suitable for building development, and treed buffer zones screening various land uses from each other. Existing residential, commercial and industrial buildings in this zone would become non-conforming uses and could not be upgraded or replaced. This applies to several buildings in the Central Business District.

Shoreline Based Land Uses

The existing floatplane base and fish packing plant are both important economic activities in Buffalo Narrows and each requires shoreline access. They are a unique form of commercial and industrial land uses and are identified as a special zone. While there are a number of disadvantages to their location in the Central Business District, their historical presence and economic importance outweigh their conflict with surrounding land uses, therefore, we have created a special land use category for them which excludes all commercial and industrial uses except those that require direct shoreline access.

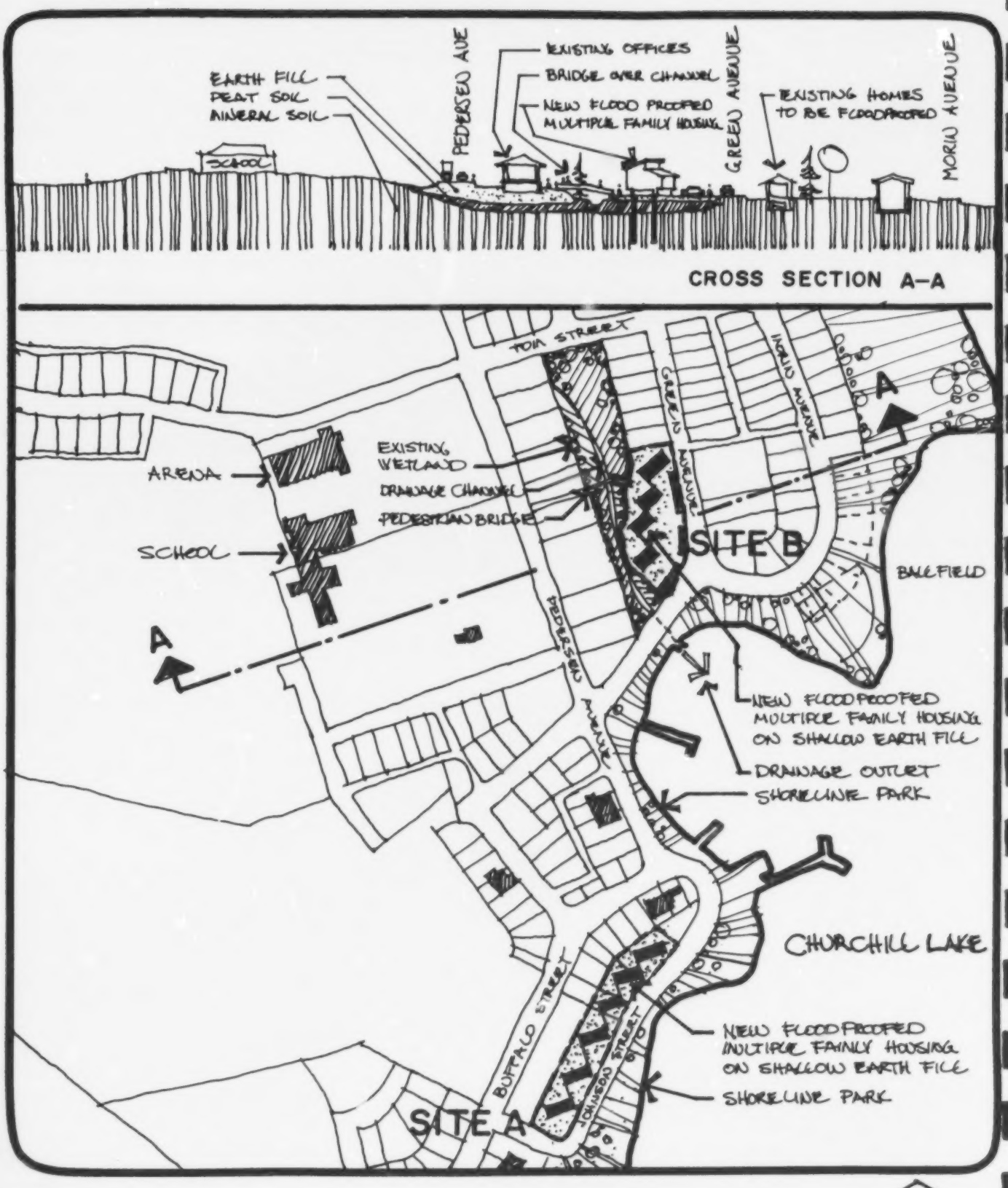
ACTION PLANS

This section of the report presents conceptual design proposals for a number of issues identified elsewhere. The Action Plans are used to illustrate specific development opportunities that exist within the corporate boundaries of the Village.

Housing Action Plan

As explained in the Housing section of this report, 65% of the village owned serviced lots are moderate to very low sites. The conventional approach of bulldozing the site and adding earth fill is not considered practical nor desirable for many of these lots and more innovative and less environmentally damaging methods are required.

This action plan illustrates two design options for developing single family homes on low lots along Barney Avenue and Aubichon Drive. In both cases the housing units have been designed to compensate for difficult terrain problems by eliminating basements and structurally elevating the home, driveway and outdoor recreation areas. Most of the lot is left at existing grade with the existing ground cover and surface drainage intact. The spoil areas required for construction are minimized and fenced during construction, and may be easily landscaped by the developer or homeowner. Landscaping costs are kept to a minimum by selective clearing and preservation of existing trees and ground cover. By combining this planning approach with a careful selection of exterior finish materials and colors that blend with the natural environment, a successful marriage of house and site is possible.



INFILL HOUSING ACTION PLAN-1

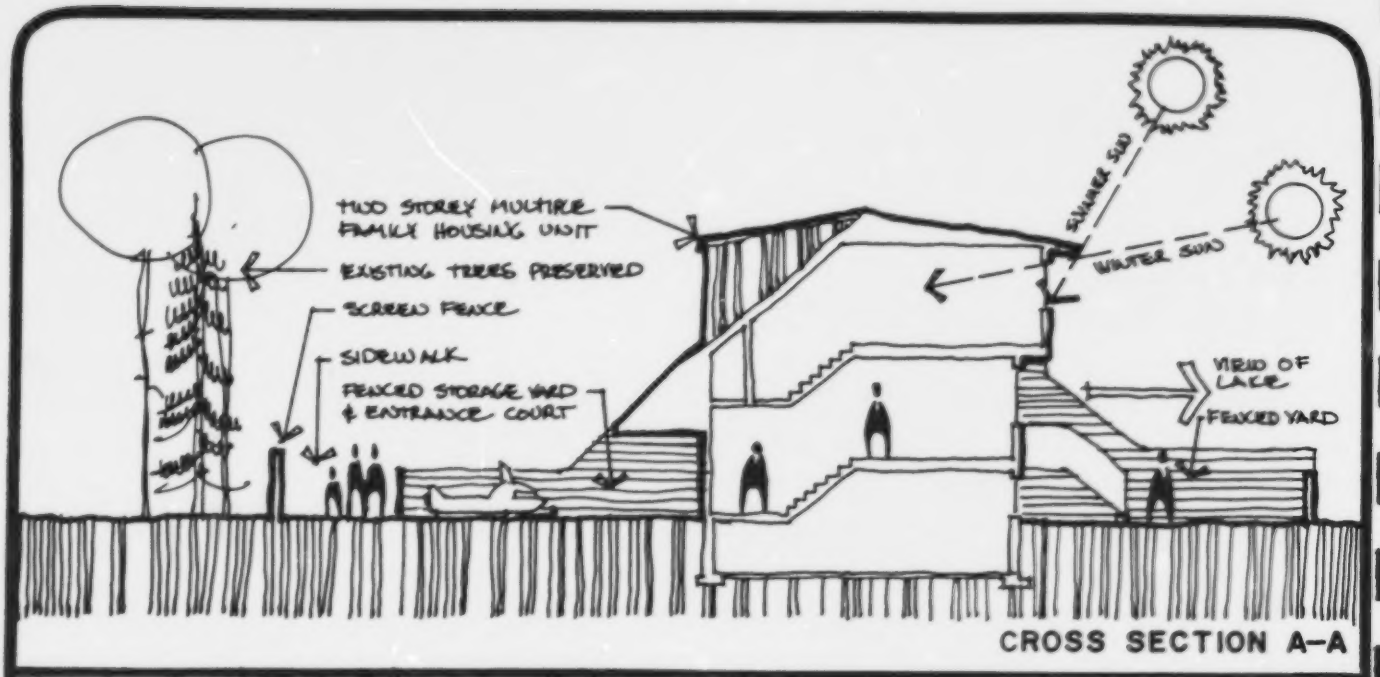
Infill Housing Action Plan #1

There are three areas within the developed part of the Village that have potential for infill multiple family housing utilizing existing sewer and water services. Two of these sites A & B, are shown on the facing page. Both sites lie within the Flood Fringe Zone on existing wetlands (elevation 420.6 M to 421 M) and adjacent to existing underground services. A geotechnical investigation will be required for both sites to determine the depth of peat, servicing problems, and the structural requirements for building foundations. Both sites have the opportunity to combine a southern exposure with a view of Churchill Lake for each housing unit and both are conveniently located near the Central Business District.

This action plan illustrates one alternative for development. A thin layer of earth fill (0.4 M to 0.6 M), is applied to each site in order to provide a new ground surface suitable for parking and recreation purposes only. These areas can be left below the Design Flood Level because they will incur little damage from flooding. This reduces the quantity and cost of earth fill necessary for development.

The multiple family housing units are supported on pile foundations, have no basements and are elevated on concrete walls or piers so that the first floor is 0.5 M above the Design Flood Level. If we assume that the new ground surface on each site would be raised to 421.4 M, the elevated concrete foundation walls would be about 1 M high.

By using this approach or the other development alternatives outlined in the sections in this report entitled, "Development on Wetlands" and "Flood Proofing Alternatives" the Village may be able to economically develop marginal lands and increase utilization of existing underground services.



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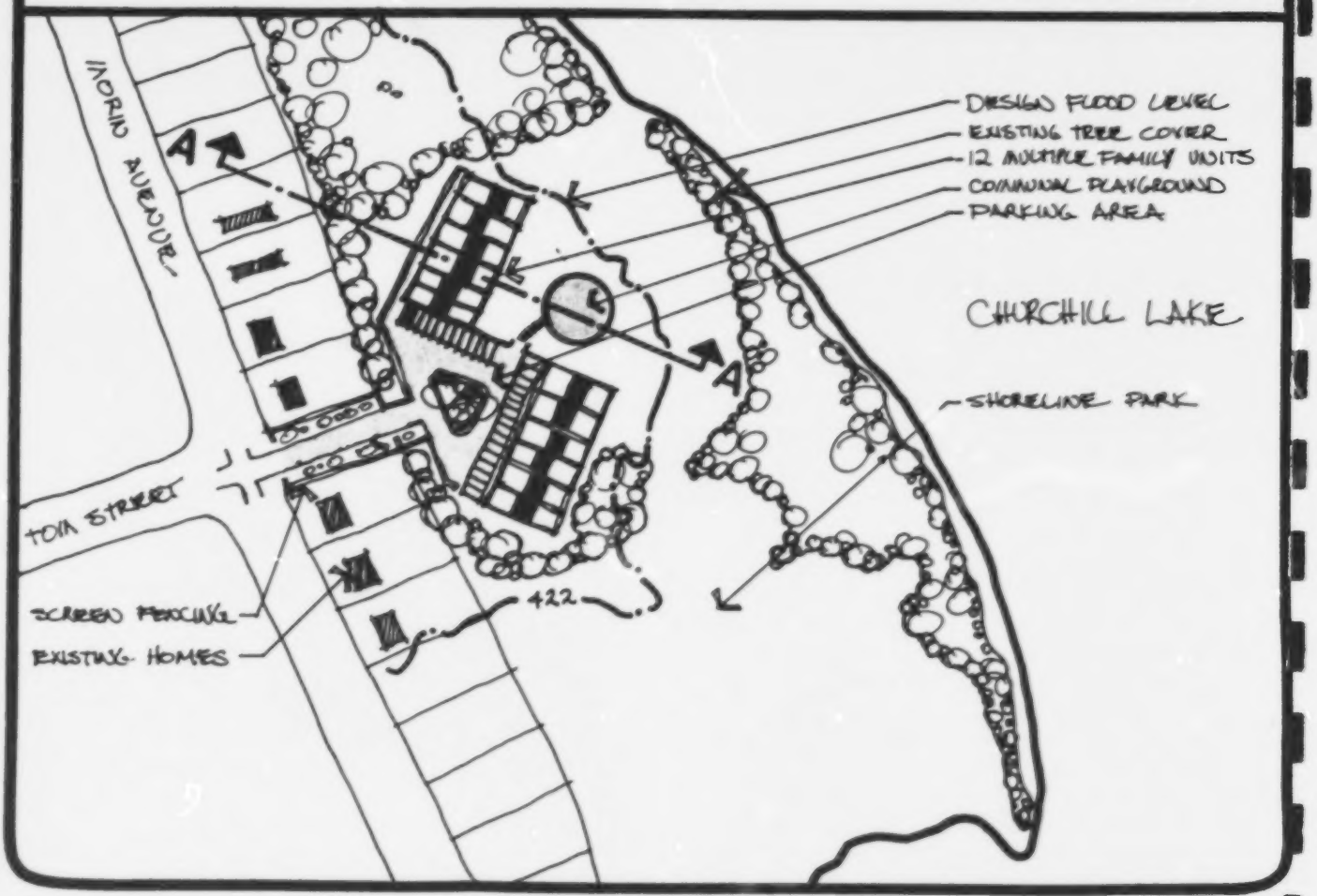
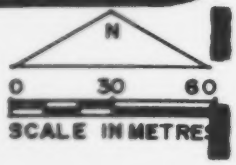


INFILL HOUSING ACTION PLAN – 2

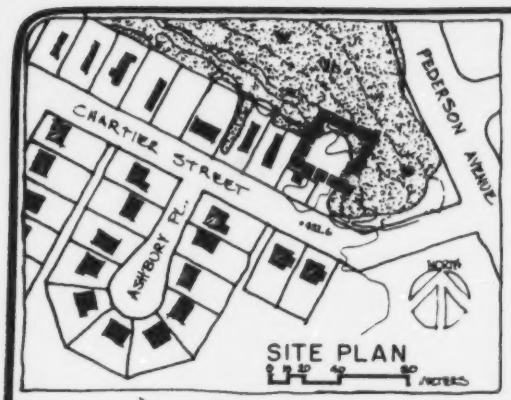


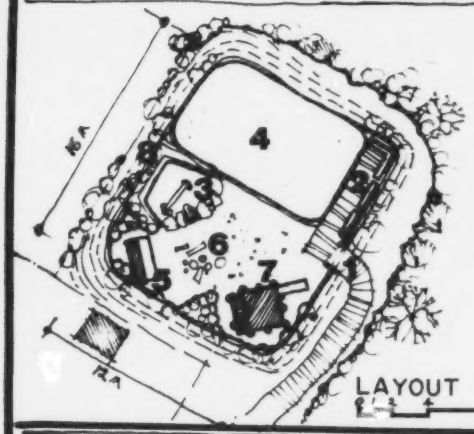
Infill Housing Action Plan #2

Another area that has potential for infill multiple family housing is site C which is shown on the facing page. This site is not flood prone and could be economically developed by extending Tom Street and the existing sewer and water services. One low vacant residential lot, Lot 8, Block 14, would be lost as a result.

This action plan illustrates one alternative for development. Shown are 12 semi-detached multiple family housing units. The units have been sited to provide each unit with a view of Churchill Lake and a southern exposure for passive solar heating. The group parking area is visually and acoustically screened from adjacent single family homes by fencing and a planted buffer strip. A treed and landscaped island in the parking lot provides a visual termination of Tom Street and shade and character to the group parking area. It is suggested that the individual front and rear yards be fenced and that a playground for small children be combined with a communal recreation area on the lakeshore side of the development.

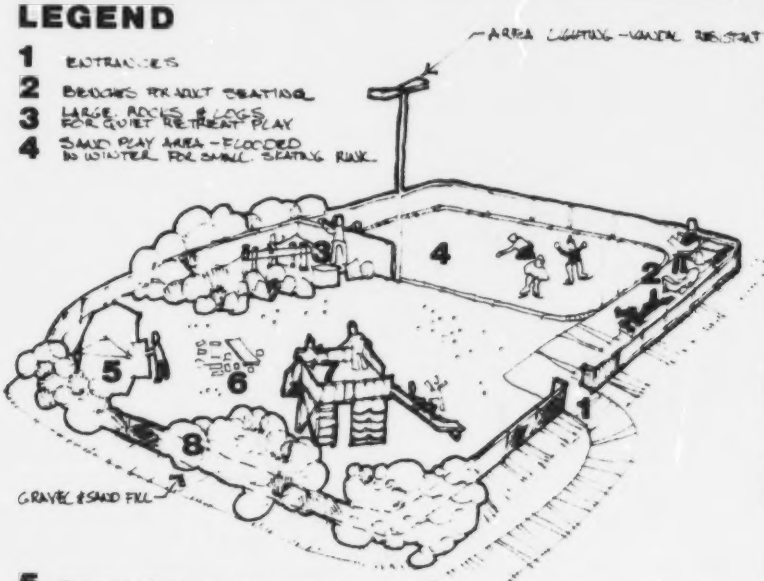
If designed in a careful manner, this site has the potential to be a high quality residential development utilizing a prime piece of land in the community. With attention to well designed screen fencing and appropriate buffer planting, the impact of this development on neighbouring properties can be kept to a minimum.





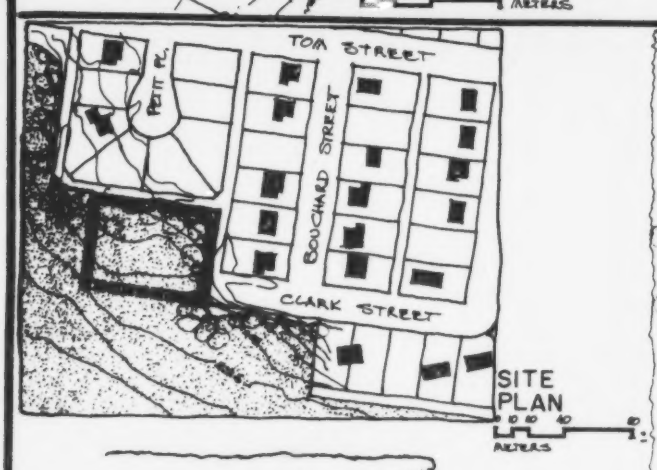
LEGEND

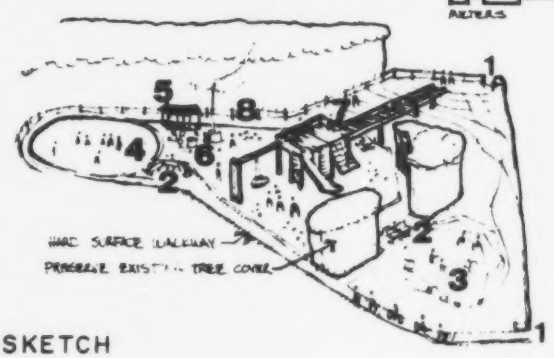
1 ENTRANCES
2 BENCHES FOR ADULT SEATING
3 LARGE ROCKS & LOGS FOR QUIET RETREAT PLAY
4 SAND PLAY AREA - ELEVATED TO WINTER FOR SMALL SEATING WALL

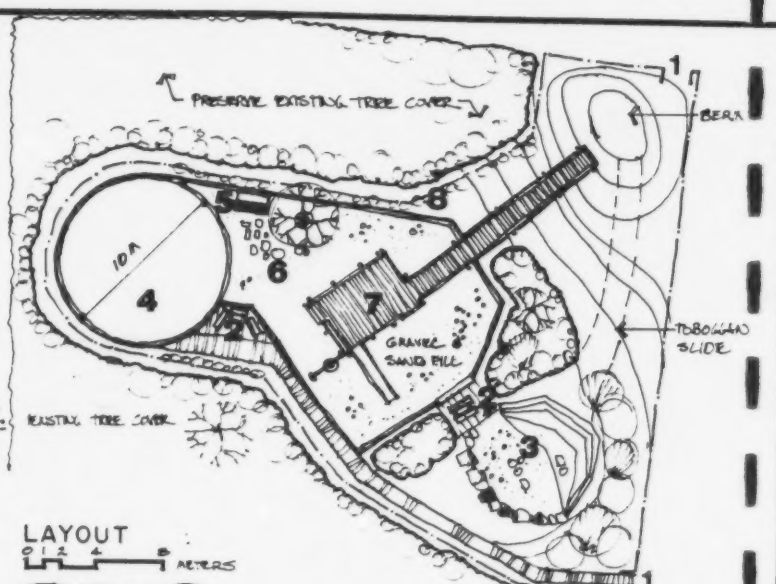


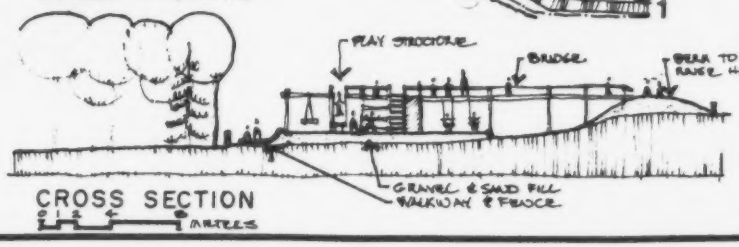
5 PLAY EQUIPMENT STORAGE SHED
6 LOOSE MATERIAL FOR PLAY
7 STRUCTURE FOR PHYSICAL PLAY
8 SHRUBS, PLANTING & FENCING FOR BACKGROUND OF THE PLAY SPACE - & SEPERATION OF PLAY ACTIVITIES.

SKETCH









PLAYGROUND ACTION PLAN

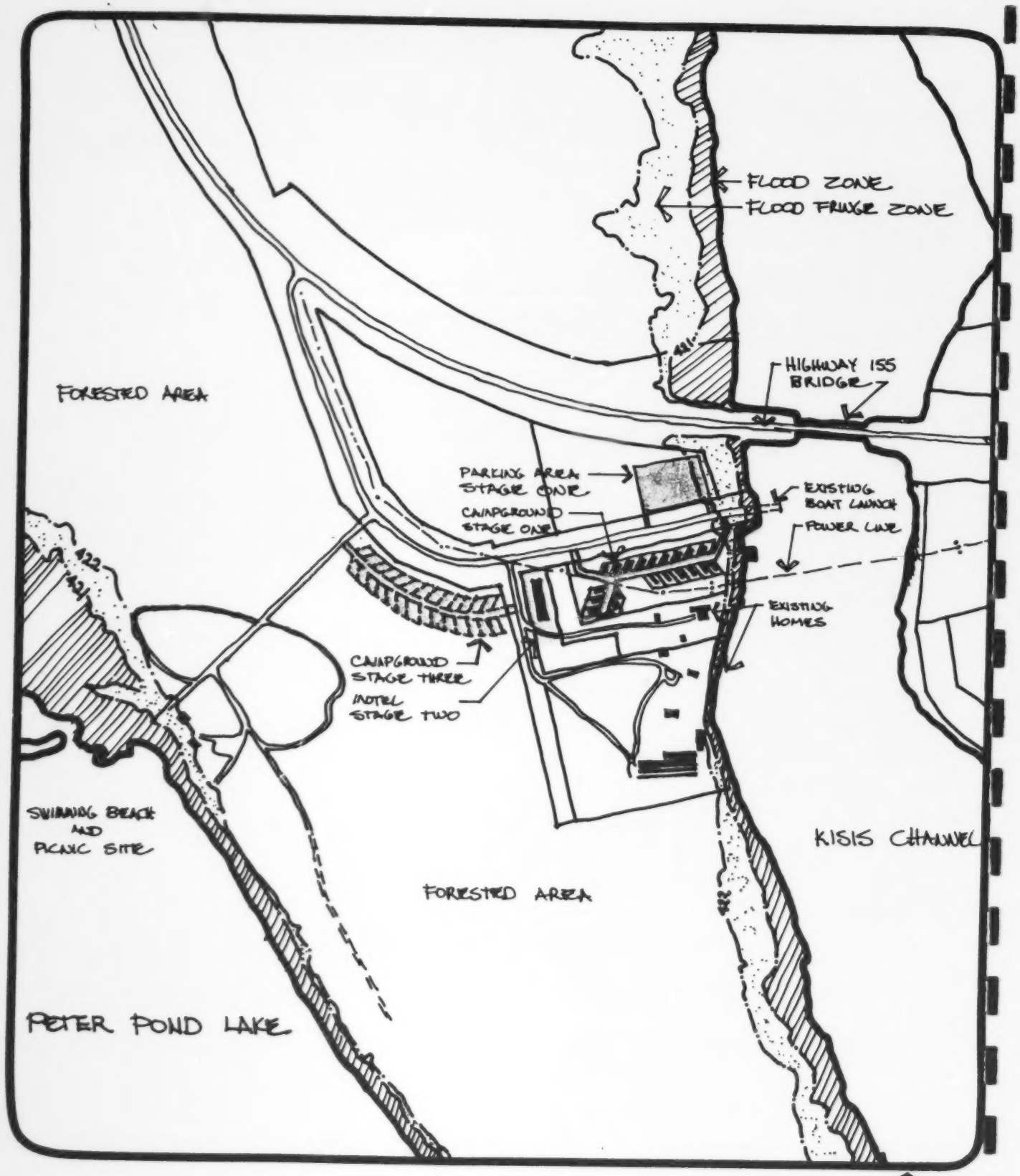
Playground Action Plan

One of the recreation needs identified by community residents at the March 29, 1984 public meeting was for outdoor play facilities for small children. The majority of recreational facilities are near the school and designed for school age children and adults. There are no neighbourhood playgrounds for preschool children in the Village. This action plan identifies two sites for neighbourhood playgrounds.

The upper design is for a flat site adjacent to sewage pumping station #4, just off Chartier Street. The design calls for granular fill to be brought in to raise the ground level and ensure good drainage. A small 15 M x 12 M fenced play area for preschoolers is illustrated. Included are areas for different kinds of activities including physical, social, creative cognitive and quiet retreat play. A sand play area is flooded in winter for a small skating rink and adult seating and area lighting is provided.

The lower design is for a sloping site adjacent to Clark Street. The design calls for a play structure, bridge and toboggan slide to utilize the change in elevation. Granular fill, a hard surface walkway, fence and adult seating are shown along with areas for the different kinds of play activities described above. This layout is larger than the Chartier Street one and could be used by younger school age children in addition to preschoolers. Careful clearing and preservation of clumps of trees or particular feature trees is important to the attractiveness and success of the development.

The same design principals can be used to develop other neighborhood playgrounds for preschool age children elsewhere in the Village.



CAMPGROUND ACTION PLAN

Campground Action Plan

In the section of this report describing the potential for development of a local tourist industry, a need for a campground for recreation vehicles and a motel was identified. After several potential sites were examined and reviewed with council, the old ferry site southwest of the bridge was selected. Its advantages include:

a) good access and visibility from Highway 155,
b) adjacent to the existing boat launch and parking area and within 500 meters of swimming beach and picnic site on Peter Pond,
c) reasonably economical to develop because of existing well, roads and electrical services,
d) reasonably isolated from the community to minimize conflict between tourists and local residents.

Its disadvantages include:

a) subject to traffic noise from bridge,
b) will require sewage collection tanks and expensive pump out service,
c) part of the site has no forest cover, difficult to screen campsites from each other,
d) existing 25 K.V. power transmission line passes through site.

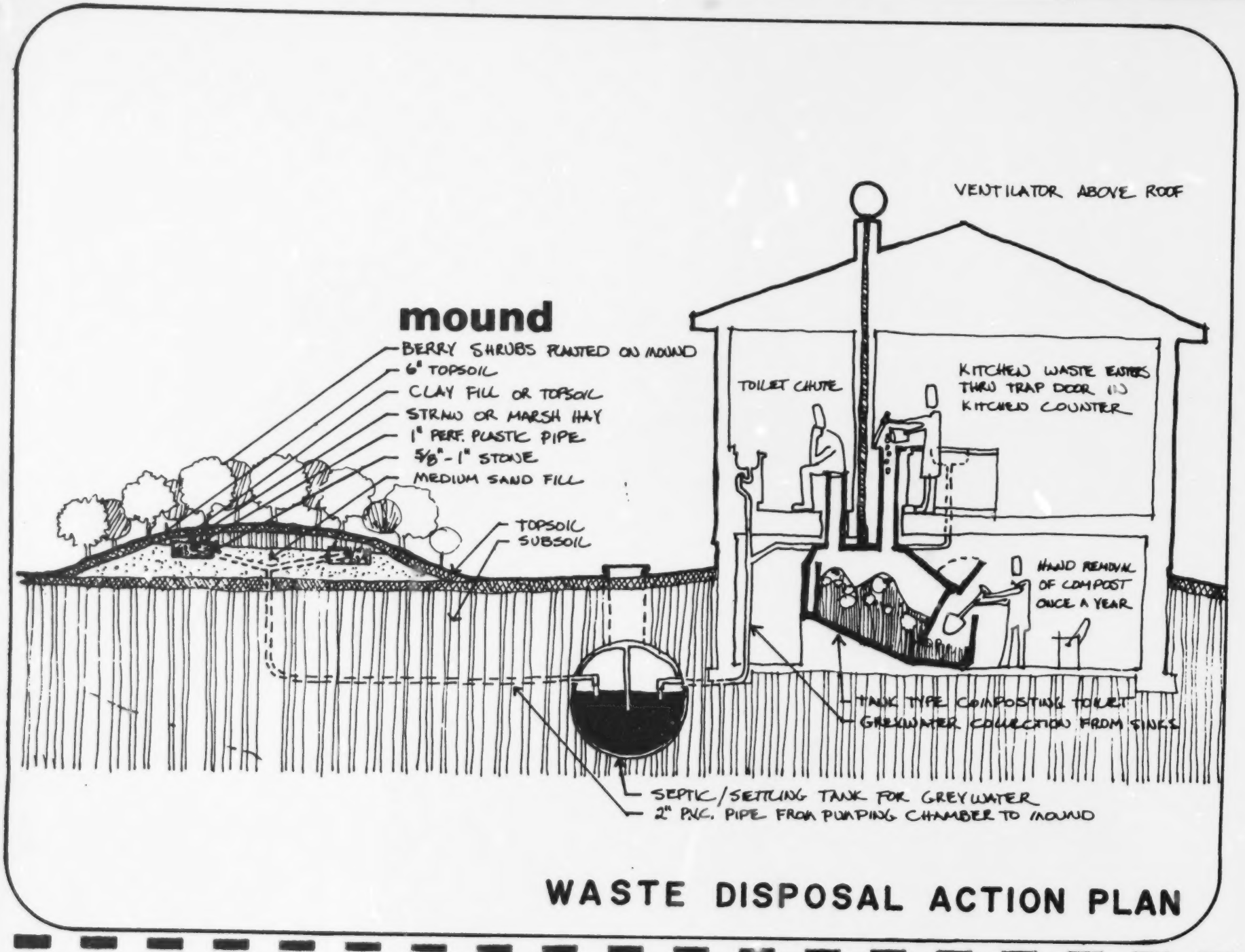
This action plan shows a staged development of tourist facilities at the old ferry site.

Stage one includes the construction of a campground for 20 to 30 recreation vehicles and a large parking area adjacent to the existing boat launch on the west side of Kisis Channel.

Stage two includes the construction of a motel on commercial property west of the campground. The current owner has proposed a motel for this site and the land was subdivided and zoned accordingly by Community Planning Branch and the Village.

Stage three includes the construction of a campground for additional recreation vehicles and a walking path to the swimming beach on Peter Pond Lake. This site is heavily treed and more expensive to develop than the stage one site but is closer to the beach area and more secluded from highway noise.

Detailed site investigations and design drawings will be required for all three sites before development proceeds.



WASTE DISPOSAL ACTION PLAN

Waste Disposal Action Plan

On site treatment and waste disposal is a possible alternative to both the existing pump-out tanks and a conventional underground sewage line because of the large size of the lots and low density of housing along Kisis Channel. One individual system that is available is a combination of large tank type composting toilets and grey water absorption mounds.

The tank type composting toilets have been successfully marketed in Sweden, the U.S.A. and Canada in a pre-manufactured fiberglass version costing approximately $4,000 and which are approved for use in most states and provinces. A concrete site constructed version of the unit has been developed and tested in the U.S.A. and can be constructed using local materials and skills for about half the cost of the commercial units ($2,500) or even less by the owner ($1,500). The units are fairly simple to operate. They reduce household water consumption by 40 to 50 percent and sewage and garbage production by the same amount. They restrict the spread of water born pathogens into the environment by containment of human wastes and convert household waste products into a valuable fertilizer. According to author C. H. Stoner, "The relative risks of composting toilets appear to be less than those associated with either the conventional septic system or the sewers and central treatment plant". (Stoner C. H., 1977, p. 219).

Absorption mounds were first developed in northern Manitoba more than 20 years ago and have proven successful under severe winter conditions and where shallow soils cover bedrock or where there is a high water table. When mounds are planted with food producing plants such as berry shrubs, they help to stabilize the soil, increase the evaporation and transpiration rate and provide an important household food supply from waste water nutrients.

The existing sewage holding tanks beside Kisis Channel homes could be easily modified with baffles into septic tanks that would provide for solids settlement and some retention and pretreatment of the grey water before it would be pumped up to the mound. Additional equipment required would include a sewage pump and plastic drain line connecting the tank with the mound. This system would utilize the existing holding tanks rather than discard them as a conventional gravity system would do.

This system should be tested on a small scale in a pilot project involving a number of Kisis Channel homes (4 - 6). It should be evaluated by homeowners and monitored by health authorities over at least a 2 year period. Local contractors could carry out the work using local labor and materials and the community health worker could be trained to provide homeowner instruction and

monitoring of installations. Funding for construction and technical assistance would be cost shared between the province and the Village.

If the pilot project proves successful, the information would be useful in other northern communities and could be a cost-effective alternative to centralized conventional municipal systems. Normally this kind of individual system can be constructed for 1/3 to 1/2 the cost of a conventional gravity sewer system.

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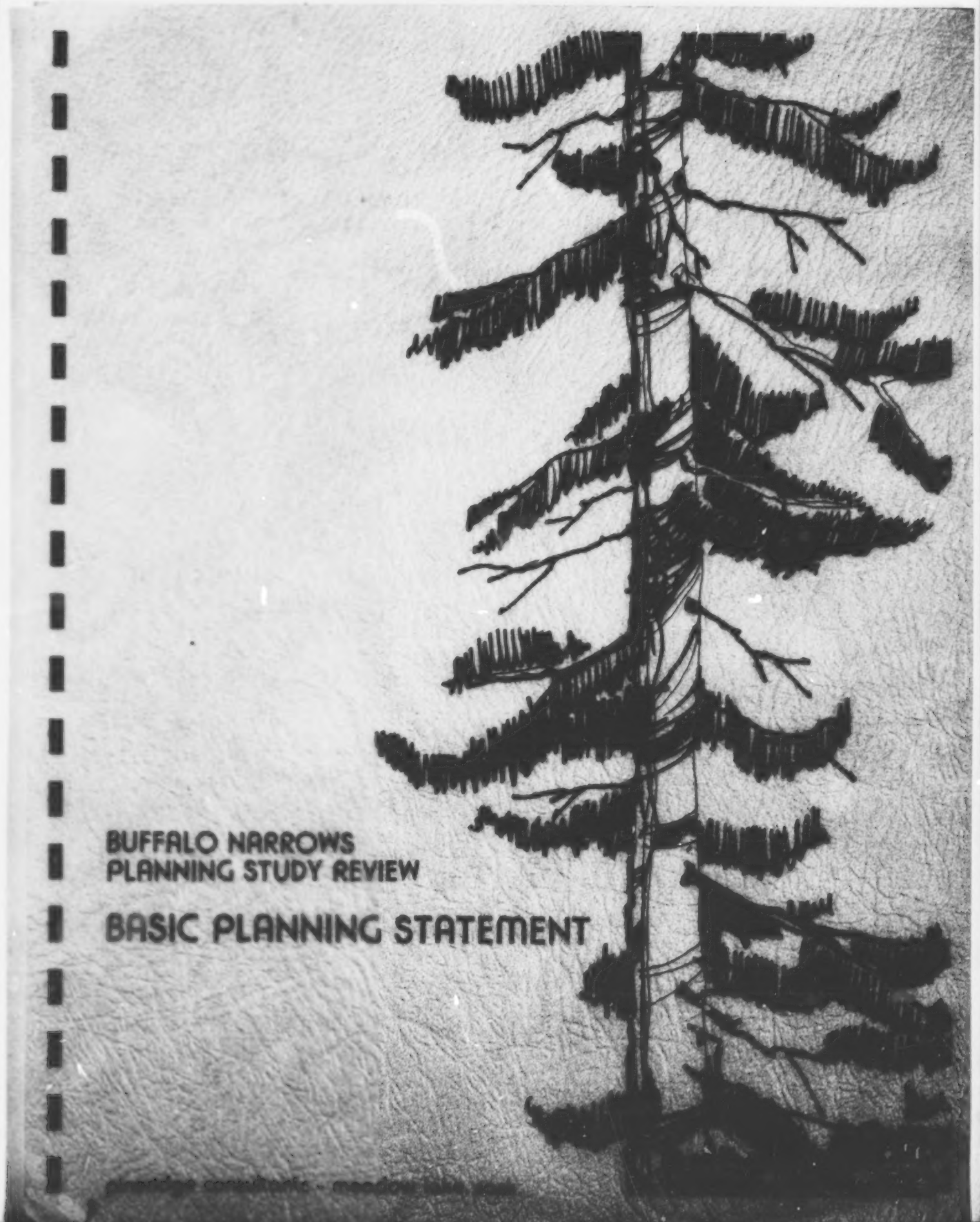

BUFFALO NARROWS
PLANNING STUDY REVIEW

BASIC PLANNING STATEMENT

planridge consultants - meadow lake sask.

BUFFALO NARROWS PLANNING STUDY REVIEW
BASIC PLANNING STATEMENT

PREPARED FOR THE NORTHERN VILLAGE OF BUFFALO NARROWS AND
COMMUNITY PLANNING BRANCH, SASKATCHEWAN URBAN AFFAIRS
BY PINERIDGE CONSULTANTS - JULY, 1985

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architecture
urban design & research

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Box 1387, MEADOW LAKE, SASKATCHEWAN, S0M 1V0

July 1985

Mr. T. Pedersen
Acting Mayor
Northern Village of Buffalo Narrows

Mr. J. C. Lere
Manager of Community Planning
Saskatchewan Urban Affairs

Gentlemen:

We are pleased to submit the final report of the Buffalo Narrows Planning Study Review. As requested, we have seperated the report into two parts, the Background Study and the Basic Planning Statement.

We wish to thank the councilors and village staff for your co-operation and assistance during the study period. In addition we wish to thank all the provincial government staff who provided important information and advice. Finally we thank the residents of Buffalo Narrows for their insights and comments during the many interviews and meetings.

We were pleased to have the opportunity to work with many of you again and trust that this report will help you successfully guide the development of your community in the years ahead.

Yours Truly,

Monty Samson
Marlynne Samson.

MS/ml

TELEPHONE (306) 236-4224

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APPENDIX A

Map 2 Rural Land Use
Map 7 Proposed Urban Land Use

1.0 INTRODUCTION

1.1 Purpose of the Basic Planning Statement

The purpose of a Basic Planning Statement is to set down policy statements that are formulated by the Council to guide future growth and development in the community. The Statement outlines the municipality's objectives for the management and development of land within its boundaries.

The Basic Planning Statement is adopted as a prerequisite to a Zoning Bylaw which establishes the land use controls. The Basic Planning Statement and the Zoning Bylaw work hand-in-hand: the Statement needs the Zoning Bylaw to implement the intent of the policies through specific land use regulations, and the zoning regulations and maps must be in conformity with the policies in the Basic Planning Statement. The policy statements serve as a framework to guide the Council in making decisions regarding any applications for amendments to the Zoning Bylaw.

The Basic Planning Statement provides a reference for the Council to follow in its day-to-day decisions regarding land use, zoning, subdivisions and development in general. Adherance to the Basic Planning Statement and Zoning Bylaw will ensure that development occurs in an orderly manner following the direction set by Council.

1.2 Background Study

The policy statements address the issues and concerns that are identified in the background study entitled "Buffalo Narrows Planning Study Review - Background Study" prepared by Pineridge Consultants in 1985. The background study provides useful information and analysis on the community's growth, population projections, existing land use and economic development along with background maps. As such, the study should be consulted for further information.

The policy statements have been developed through a discussion and review process with the Council, and general public during the preparation of the background study. These policies have been revised, updated and expanded to reflect recent changes in the community. As well, the structure of the proposed Bylaw has been changed to meet the legislative requirements of the Planning and Development Act, 1983.

1.3 Format

The development objectives and policy statements in section 2.0 are grouped under many different headings. Under each heading a discussion of existing conditions is presented, general objectives are established and specific policies outline the course of action Council intends to take to obtain these objectives. The mechanisms available to Council for implementing the policy statements are described in section 3.0.

1.4 Scope

No development shall be carried out in the municipality that is contrary to the Basic Planning Statement. The Basic Planning Statement is binding on the municipality and all other persons, associations or organizations. However, the Basic Planning Statement does not commit the municipality, the Province or any person to undertake any of the projects outlined or proposed in the Statement.

1.5 Legal Basis

Section 39 of the Planning and Development Act, 1983 gives the municipality authority to prepare a Basic Planning Statement. The content of a Basic Planning Statement is set out in Section 42 of the Act as follows:

"A basic planning statement is required to:

a) contain a statement of the objectives for the future development of the municipality;
b) contain a statement of the objectives to be accomplished by a zoning bylaw;
c) incorporate, insofar as is practical, any applicable provincial land use policies;
d) be based on any studies and surveys that the minister may require or that may otherwise be appropriate; and
e) address any other matter that the council considers advisable."

The Basic Planning Statement is adopted as a bylaw by the Council and has no effect until it is approved by the Minister of Urban Afairs. In conjunction with a Basic Planning Statement, the Council must prepare and adopt a separate Zoning Bylaw.

1.6 Review and Amendments

As new issues and concerns arise in the municipality, the Basic Planning Statement can be revised to meet these changing needs. Council should carry out a review process of the Basic Planning Statement from time to time to identify changes in background information or community concerns, determine whether the stated objectives are still relevant, and decide if the policies are effective in addressing the current development issues. If changes are required, the Basic Planning Statement may be amended by Council.

A specific land use or development proposal may require an amendment to the Zoning Bylaw which would not be in conformity with the Basic Planning Statement. Any part of the Zoning Bylaw that is inconsistent with the Basic Planning Statement has no effect. Council may wish to amend the Basic Planning Statement to allow the proposed development to proceed. When considering an amendment, Council should determine if the proposed change is in the interest of the future development of the municipality as a whole.

An amendment to the Basic Planning Statement may be prepared by the authorization of the Council or the requirement of the Minister. Any amendment is adopted by bylaw and approved by the Minister.

1.7 General Goals

1. To protect the health, safety and general welfare of the residents of Buffalo Narrows.
2. To create a more pleasant, efficient, appropriate and convenient community.
3. To provide for the orderly development of Buffalo Narrows.
4. To promote development while minimizing the detrimental social, economic and environmental impact.
5. To anticipate and set out future land requirements for a variety of uses.

2.0 DEVELOPMENT OBJECTIVES AND POLICY STATEMENTS

2.1 Heritage Resources

2.1.1 Discussion:

a) There is a wealth of heritage resources located in and around the Village including local collections of artifacts and archaeology sites along Kisis Channel.

b) Artifacts recovered locally indicate human occupation of the area 9500 years ago.

c) The Council plans to relocate and develop the old Catholic Church as a museum.

2.1.2 Objectives:

a) To ensure the preservation of local heritage resources.

b) To develop and display these resources for the benefit of local residents, particularly children.

c) To develop and display these resources in order to encourage interest from tourists.

2.1.3 Policy:

a) The Council will proceed with plans to develop a local museum.

b) The Council will ensure that future development in the Kisis Channel does not damage existing heritage sites.

c) The Council will undertake a study examining the development of an interpretive walking trail along Kisis Channel connecting heritage sites.

2.2 Environmental Protection

2.2.1 Discussion:

a) There are a large quantity of hazardous goods trucked through the Village regularly.

b) The existing route for these goods is the Main Street which runs past numerous homes, stores and the school and health center. Also at risk is the float plane base and municipal water intake.

c) In the event of an accident involving dangerous goods the Village will be required to deal with it as senior governments provide advice only. The Village currently has no emergency measures plan and local firefighters are inadequately prepared for a hazardous goods accident.

2.2.2 Objectives:

a) To ensure that the health and safety of Village residents is adequately protected from an accident involving hazardous goods.

b) To ensure that local municipal staff, firefighters, police and health officials are adequately prepared to deal with such an emergency.

2.2.3 Policies:

a) The Council will encourage the provincial government to construct a truck bypass to divert hazardous goods transportation around the Village as soon as possible.

b) The Council will take immediate steps to develop an emergency measures procedure for the Village and seek provincial help in training local firefighters and others to deal with hazardous goods accidents.

2.3 Economic Development

2.3.1 Discussion:

a) The unemployment rate in the Village is unacceptably high.

b) The Village is highly dependent on government as a major employer and economic generator.

c) The dependency on social assistance has increased dramatically since the summer of 1983.

d) Primary industries such as commercial fishing are considered as stable and viable although federal government marketing practices have reduced local employment in the industry.

e) Forestry has not proven to be a viable local industry and harvesting and sawing activities in the area are carried out mainly by outside contractors for distant sawmills.

f) Tourism remains underdeveloped locally despite recent highway improvements and increasing tourist traffic. A growing trend in the tourist industry is towards people seeking non-consumptive recreational experiences and the historical and natural resources of the Buffalo Narrows region could attract some of this market.

g) Mining development in Northern Saskatchewan has not created the economic boom expected by local residents. It remains to be seen whether the short term employment benefits will outweigh the long term costs in worker health and environmental damage.

h) The absence of local banking services is a discentive to economic development.

2.3.2 Objectives:

a) To reduce the high unemployment rate and social assistance levels.

b) To reduce the Village dependency on government employment and activities by stimulating the existing primary industries and encouraging the development of labour intensive secondary industry.

2.3.3 Policies:

a) The Council will encourage senior governments to improve the economic stability of primary industries like commercial fishing by enhancing fish stocks through a combination of fish hatching and rearing projects in addition to resource management. This is an example of how investments in renewable resources could provide long term economic sustainability.

b) The Council will encourage the development of a non-consumptive tourist industry by undertaking the following actions;

i) Cost Sharing - A study of tourism potential for the community with the provincial government. The study would identify market strengths and opportunities for local investment and employment.

ii) Encouraging local private investment in tourist facilities such as a motel, marina and boat rental and tour operators.

iii) Undertaking development of camping facilities, interpretive trails and a museum.

c) The Council will support initiatives to utilize local forest resources such as the "Buffalo Narrows Precision Cutting Mill Project". This project has the promise of long term sustainability by combining intensive forest management with the production of specialty wood products. Training programs and feasibility studies are currently underway.

2.4 Community Health

2.4.1 Discussion:

a) Existing health services are considered inadequate by village residents.

b) Existing programs for mental health and alcohol rehabilitation are considered inadequate by village residents.

c) The extensive travel often required for health care is unacceptable to village residents.

2.4.2 Objectives:

a) To improve the range and quality of health services available to village residents.

b) To reduce the travel required for health care.

2.4.3 Policies:

a) The Council will encourage the development of a local hospital.

b) The Council will encourage the recruitment of a resident doctor or doctors and additional nursing staff.

c) The Council will encourage senior governments to expand programs for mental health and alcohol rehabilitation in the community.

2.5 Recreation Services

2.5.1 Discussion:

a) Many of the existing recreation facilities are inadequate and costly to operate and maintain.

b) Forty-five (45%) percent of the village population is under 20 years of age. The availability of recreation opportunities for this group is particularly important.

c) The average annual population increase for the last 5 years is 3.6% and a projected growth rate of between 2% and 3% is considered realistic in future years. This will mean that the need for recreation facilities will continue to increase.

d) There are no neighborhood playgrounds for preschool children.

2.5.2 Objectives:

a) To replace existing recreation facilities with larger more adequate ones for a growing population.

b) To provide a range of recreation facilities that can benefit the entire community from the youngest to the oldest.

2.5.3 Policies:

a) The Council will replace the existing community hall and curling rink with new facilities integrated with the existing arena. The hall will be a multi purpose gym/hall.

b) The Council will ensure that planning for the Lakeview Complex will include an activity center for senior citizens.

c) The Council will undertake development of neighbourhood playgrounds for preschool children throughout the village.

2.6 Housing

2.6.1 Discussion:

a) There is a need for rental housing units to meet the requirements of singles, single parents, small families and the elderly. For these people single family housing is too large and too expensive.

b) There is a trend towards owner built log housing in the village, independent of government programs.

c) The government financed family housing program has not worked well in the village. Approximately 90% of homeowners are in arrears and only 50% to 75% are making regular monthly payments. The homes are costly to operate and maintain and the high levels of unemployment have made mortgage repayment difficult for many families.

2.6.2 Objectives:

a) To ensure an adequate supply of housing of the type needed by village residents.

b) To encourage the independent housing movement.

c) To assist local homeowners currently struggling with government financed homes and large arrears to renegotiate and stabilize their financial position on these homes.

2.6.3 Policies:

a) The Council will encourage the construction of a wide range of rental housing units in the village by promoting and providing land to developers for such purposes.

b) The Council will encourage the trend towards the independent log housing movement by providing serviced and unserviced land to owner builders.

c) The Council will encourage government financed homeowners to establish an association to identify design, program and financing problems and to collectively negotiate a new deal for financing existing homes.

2.7 Residential Lot Supply

2.7.1 Discussion:

a) Two thirds of village owned serviced lots are moderately low to very low and will require special design solutions if they are to be developed.

b) One fifth of all vacant serviced lots are privately owned and one half of these are used in conjunction with adjacent housing as gardens, driveways or garages. Until lot prices or taxes increase it is unlikely that these lots will be placed on the market.

c) At an annual demand rate of 6 to 10 lots there is a 2 year supply of village owned serviced lots and another 3 to 5 year supply of low lots.

d) There are several undeveloped sites in the village adjacent to existing services that have potential for infill multiple family housing.

2.7.2 Objectives:

a) To ensure that all available serviced lots are utilized before new subdivisions are constructed.

b) To ensure that an adequate supply of serviced lots are available for development.

c) To ensure that all land with development potential adjacent to existing services is developed or analyzed before new subdivisions are constructed.

2.7.3 Policies:

a) The Council will encourage development of low lying lots by promoting the use of design techniques illustrated in the housing action plan. Incentives could include reduced lot prices.

b) The Council will encourage developers to purchase privately held vacant lots for new housing development.

c) The Council will encourage infill multiple family housing by promoting the use of design techniques illustrated in the infill housing action plans. Incentives to developers could include reduced land prices.

d) The Council may undertake a geo-technical engineering study for each infill site identified in the background report to determine the feasibility of development. The results of this study will be made available to potential developers at no cost to them.

2.8 General Rural Land Use

2.8.1 Discussion:

a) There are a large amount of wetlands within the corporate boundaries that are unsuitable for development.

b) There are a number of existing and potential rural land uses for the limited supply of uplands available for development.

2.8.2 Objectives:

a) To ensure that there is an adequate supply of land suitable for rural development needs within the corporate boundaries.

b) To direct development so that future land use conflicts are avoided.

c) To ensure that rural development occurs in a safe, orderly and attractive manner.

2.8.3 Policies:

a) The Council will adopt the proposed land use zones shown on the rural land use map and use them as guidelines in developing a zoning bylaw.

b) The Council will undertake a study to examine the feasibility of developing a cottage subdivision in the vicinity of the village primarily for use by local residents.

2.9 Hazard Lands

2.9.1 Discussion:

a) There are large wetland areas within the village that are unsuitable for development.

b) There are large flood prone areas within the village that are difficult to develop and existing development that requires flood proofing.

c) Final flood hazard designation for the village is not yet available from the Canada, Saskatchewan Flood Damage Reduction Program (F.D.R.P.) although mapping has been completed.

d) A major factor limiting development in the village is the high water table.

2.9.2 Objectives:

a) To prevent development of lands which are unsuitable for development due to existing and potential physical hazards.

b) To direct development to lands without physical hazards or to lands where existing hazards can be minimized through site treatment and building design.

2.9.3 Policies:

a) The Council will ensure that no development occurs on flood prone or wetland areas unless a thorough site investigation is carried out and indicates that the hazards can be minimized.

b) The Council will designate an Interim Flood Design Level (D.F.L.) of 422 M until a final designation is made by the F.D.R.P.

c) The Council will establish two land use zones for flood prone lands in accordance with the flood plain map. These zones are as follows:

i) Flood Zone - This zone has a high risk of flooding and includes all lands below elevation 421 M. Permitted land uses in this zone must be either flood proofed or those that would incur minimum damage from flooding.

ii) Flood Fringe Zone - This zone has a moderate risk of flooding and includes all lands between elevation 422 M and 421 M. Permitted land uses in this zone must be either flood proofed or those that would incur minimum damage from flooding.

d) The Council will establish flood proofing guidelines for existing and proposed buildings in the flood zone and fringe zone based on the following criteria:

i) Existing and Proposed buildings shall be flood proofed by one of the following methods:
- earth fill
- elevating foundations
- watertight closures, seals or shields
- flood walls or earth berms
- elevating mechanical and electrical equipment

ii) All new construction will be required to have the first floor elevation a minimum of 0.5 M above the Design Flood Level plus wave run-up and wind set-up.

iii) All new construction will be required to have a professional architect or engineer's stamp on the building plans to ensure that the structure has been adequately designed to withstand flood conditions.

Alternatively, a qualified land surveyor's certificate indicating that the building site has been filled to the Design Flood Level plus wave run-up and wind set-up will be required.

2.10 General Urban Land Use

2.10.1 Discussion:

a) The central business district contains a number of land uses that conflict with the commercial character of the area and hamper commercial expansion. These include:

- eleven lots occupied by single family houses
- several warehouses.

b) The central business district is under developed as a result of wasteful land uses and numerous vacant lots that are flood prone or located on wetlands.

c) The institutional area to the north of the central business district contains a number of land uses that conflict with the institutional character of the area and hamper institutional expansion. These include:

- teacherages located on school property south and east of the school.
- a mobile home park east of the school.

d) The residential subdivision fronting on Sawmill Bay contains a helicopter base which is both a nuisance and a safety hazard to nearby homes.

2.10.2 Objectives:

a) To ensure an adequate supply of commercial and institutional lots for growth and expansion.

b) To ensure that serviced land in the village is fully utilized.

c) To ensure that conflicting land uses are eliminated over time in order to improve the convenience, appearance and efficiency of the village environment.

2.10.3 Policies:

a) The Council will adopt the proposed land use zones shown on the urban land use map and use them as guidelines in developing a zoning bylaw. Land uses that don't conform to those permitted by the bylaw cannot be enlarged, structurally altered, or replaced.

b) The Council will encourage owners of non conforming land uses to relocate or change to conform with the intent of the bylaw.

2.11 Shoreline Based Land Uses

2.11.1 Discussion:

a) The existing float plane base is located within the central business district, close to the village water intake. Aircraft noise, taxiing, refueling and storage activities at the base create some inconvenience and hazard to nearby commercial and municipal facilities.

b) Water based aircraft are an important economic activity in the village and their historical presence in the central business district provide a unique character to the community.

c) The existing fish plant is an industrial activity within the central business district dating back to the 1940's. However, it's location on the shoreline on a large lot does not conflict signifigantly with surrounding uses.

2.11.2 Objectives:

a) To ensure that historically well established or economically important shoreline based land uses remain part of the central business district.

b) To prevent non-shoreline based commercial or industrial land uses from eventually replacing shoreline based uses.

2.11.3 Policies:

a) The Council recognizes the need for a special zone for existing shoreline based land uses and will establish such a zone. Only the existing uses or other shoreline dependent uses will be permitted in this zone.

2.12 Municipal Infrastructure

2.12.1 Discussion:

a) The municipal sewer and water system operates at a deficit.

b) The lagoon and water plant are inadequately sized for present and future community needs.

c) Village water consumption is abnormally high, averaging 140 gallons per capita per day. This is 60% higher than similar sized southern communities.

d) The majority of residents (70%) living in unserviced parts of the village haul water by hand from the lake and use outdoor privies. This practice threatens the health of these people and the privies represent an environmental hazard to groundwater and existing wells where the water table is high.

e) The cost of extending underground sewer and water services to the unserviced subdivisions of Kisis Channel and Sawmill Bay are unacceptably high because of terrain conditions and low density development.

f) Individual on site waste treatment and disposal systems have not been examined as alternatives in recent engineering studies.

2.12.2 Objectives:

a) To provide all village residents with access to potable water and a convenient safe waste disposal system.

b) To reduce the operating cost of the sewer and water system, ensure that the system is upgraded to meet current and future village needs, and to reduce local water consumption.

c) To ensure that all water supply and waste treatment alternatives for unserviced subdivisions are explored before committing any major capital expenditures.

2.12.3 Policies:

a) The Council will discourage new home construction from occuring in unserviced subdivisions until a servicing policy has been established for them.

b) The Council will establish a servicing policy for unserviced subdivisions that takes into account the following options:

i) Extend municipal services - cost share with homeowners and province.

ii) Restrict municipal services - require individual systems.

iii) Same as (ii) but provide a retroactive capital grant to existing homeowners for assistance with installing or upgrading individual sewer and water systems.

iv) Same as (ii) but village undertakes individual waste treatment pilot project to test on site treatment and disposal methods.

2.13 Landscaping

2.13.1 Discussion:

a) Unco-ordinated and insensitive land development practices have destroyed much of the existing tree and ground cover throughout the village and left behind unsightly lots and piles of debris. This has increased the cost and difficulty of landscaping around buildings and altered the character of the building sites.

b) Wetland areas within the village are not seen as desirable natural areas.

2.13.2 Objectives:

a) To improve the visual quality of the village environment.

2.13.3 Policies:

a) The Council will require building developers to submit detailed site plans for all new development, and encourage the retention of existing tree and ground cover. Debris from clearing and construction activities is to be removed from all sites and all spoil areas are to be landscaped, preferably with native vegetation.

b) The Council will designate all wetland areas not identified for building infill development as natural buffer zones. Existing tree and ground cover in these zones are to be preserved and existing drainage channels maintained. No infill or dumping of any kind is to be permitted in order to improve the visual image of these natural areas.

2.14 Energy Conservation

2.14.1 Discussion:

a) Heating costs will continue to rise in the years ahead making energy conservation in buildings increasingly urgent. Existing insulation standards are inadequate.

b) Many families are heavily burdened by the high energy costs resulting from inadequately designed homes. Money spent on purchasing imported energy is largely lost to the local economy and reduces village cash flow.

d) Many simple cost effective techniques for reducing energy costs in buildings are currently available but have not been incorporated in government controlled housing programs.

2.14.2 Objectives:

a) To reduce the energy consumption and the economic burden of energy costs to village residents, thereby increasing the potential disposable income available to the local economy.

b) To introduce and educate homeowners and developers to the techniques and opportunities for financial savings from energy conservation.

2.14.3 Policies:

a) The Council will encourage developers to construct energy efficient buildings and subdivisions using land prices as incentives or various controls such as:

i) Development agreements.
ii) Zoning bylaws or caveats.
iii) Requiring an energy use and cost benefit analysis.

b) The Council will encourage medium density residential and mixed use development which will conserve energy by:

i) Reducing the length of home to work trips.
ii) Reducing the need for automobile trips and encouraging ridesharing, walking, cycling.
iii) Reducing per capita costs for street maintenance, street lighting and sewer and garbage collection.

c) The Council will require that all new residential subdivisions be designed to maximize passive solar gain. The optimum orientation for the major wall of a passive solar building is between 12^{o} and 20^{o} east of due south. Because of the low angle of winter sun, particular care must be taken to prevent shading of south facing walls by terrain conditions or adjacent buildings.

3.0 IMPLEMENTATION MEASURES

There are a number of mechanisms available to the Council to implement the policy statements in the Basic Planning Statement. The main method of implementing the policies is through the Zoning Bylaw. Other methods include the capital works program, the subdivision approval process, land assembly programs, Council support and other measures such as municipal bylaws. A brief description of each of these follows.

3.1 Zoning Bylaw

a) Description:

A Zoning Bylaw establishes separate zoning districts for different land uses such as residential or commercial. These zoning districts are outlined on the zoning district maps that are included as part of the bylaw. Each zoning district has a detailed list of permitted uses as well as discretionary uses which are decided upon by Council on an individual basis. Development standards and regulations are set down for each zoning district regarding such things as minimum lot dimensions, building set-backs and off-street parking requirements. The effect of zoning controls is to separate land uses, such as residential and industrial, which are not compatible.

A development permit system is usually established through the Zoning Bylaw. Under this system, a development permit is required before any person can carry out development within the municipality. The meaning of the term "development" includes the construction of a new building or addition as well as the change in the use of the land. Development permits are issued by the municipality if the proposed development is in accordance with the Basic Planning Statement and Zoning Bylaw.

b) Objectives to be Accomplished by the Zoning Bylaw:

1. To establish control by the Council over development in the community.

2. To implement the land use recommendations contained within the Basic Planning Statement.

3. To designate and reserve sufficient land to meet the expansion requirements of various uses.

4. To ensure that incompatible land uses are separated and conflicts avoided.

5. To direct development onto sites that are best suited for the purposes.

6. To prevent development from occuring on land that is incapable of supporting the development due to physical constraints or flooding hazards.

7. To maintain quality development through the application of regulations on minimum requirements such as site area, setbacks or parking.

c) Discretionary Uses

One of the areas where Council has discretion in the implementation of the zoning bylaw is through discretionary uses, which are uses permitted by resolution of Council at locations and under conditions prescribed by Council. However, no discretionary use shall be approved which is contrary to the Basic Planning Statement. Further, the conditions prescribed by Council under which a discretionary use is approved must be based on, and be consistent with, general development standards in the zoning bylaw and they must be, in the opinion of Council, necessary to secure the objectives of the zoning bylaw. Some jurisdictions require that some or all discretionary use applications be advertised publicly and/or that affected landowners be notified to allow them a voice in the decision making process. This is to ensure that all potentially affected landowners or residents have the right to speak on the issue.

d) Zoning Amendments

The provision for amendments to be made to zoning bylaws are contained in Part IX (Section 207-212) of The Planning and Development Act. The Act requires that public notice be given by advertisement placed in a newspaper circulated in the area affected. The notice shall state the reasons for the amendment and it is suggested that applicants for a rezoning make a very clear statement as to the purpose of the amendment.

The purpose of this public notice, again, is to allow input by potentially affected or interested parties who are entitled to make submissions to Council. It is essential that all zoning amendments be thoroughly scrutinized by Council to ensure that they are in conformity with the policies of the Basic Planning Statement and the objectives of the zoning bylaw. Zoning amendments do not come into effect until signed by the Minister.

3.2 Capital Works Program

Each year the municipality prepares a capital budget and updates it's five year capital program. As municipal priorities change from year to year we have not attempted to priorize or list all of the capital projects. However, the projects listed are those required to carry out the goals of the planning statement. The amounts budgeted for each project reflect construction and design costs in 1985 dollars.

CAPITAL PROJECT	BUDGET AMOUNT
1) Community Hall Addition to Arena	$571,000
2) Water Plant Expansion	$350,000
3) Lagoon Expansion	$390,000
4) Neighborhood Playgrounds	$ 3,000
5) Curling Rink Addition to Arena	$432,000
6) Renovation of Church to Museum and Interpretive Walking Trail Connecting Heritage Sites	$ 50,000
7) Golf Course	$ 30,000
8) Campground Development - Old Ferry Site	$ 5,000
9) Rural Residential Lot Development	$ 40,000
10) Geotechnical Study - Housing Infill Sites	$ 3,000
11) Surveying Museum Site, Housing Infill Sites	$ 5,000
12) New Cemetery Development	$ 10,000
13) Artificial Ice for Arena and Curling Rink	$200,000
14) Kisis Channel Subdivision Sewer and Water System	Cost Unknown
15) Sawmill Bay Subdivision Sewer and Water System	Cost Unknown
16) Cottage Subdivision Feasibility Study	$ 5,000

3.3 Subdivision Approval Process

Subdivision is the process whereby land is divided into smaller legal units of lots and/or streets. When land is subdivided, a separate title may be granted for each of the new lots.

By allowing the subdivision of land for different land uses to occur only according to the policies and concept maps of the Basic Planning Statement, the municipality is able to ensure that the desired type and

direction of growth takes place within the community. Because land in the expansion areas is generally unpatented Provincial Crown land with little private ownership, the municipality has the responsibility of initiating the subdivision process. Plans of proposed subdivision can be prepared by a contracted planner or surveyor, or with the assistance of Community Planning Branch, Department of Urban Affairs. Whether initiated by the municipality, government agencies or private applicants, the Council has the opportunity to comment on all proposed subdivisions within its corporate boundaries or within five kilometers of its boundaries.

The Director of Community Planning, Department of Urban Affairs, is the approving authority for subdivisions in northern communities. A proposal to subdivide land is required to conform to the provisions of the Planning and Development Act, 1983 and with the local Basic Planning Statement and Zoning Bylaw. For example, the Zoning Bylaw can establish requirements for minimum lot dimensions. Since a subdivision can not be approved unless it conforms to the Zoning Bylaw, Council has the power to directly influence subdivision and development.

If the proposed subdivision is initiated by a private owner, the municipality may require that a servicing agreement be entered into as a condition for subdivision approval. The servicing agreement may require that the private developer bear the total or partial costs of on-site services such as water and sewer extensions, as well as off-site improvements to municipal utilities and facilities. This allows the Council to ensure that the proposed development does not impose any unagreeable costs on the municipality.

3.4 Land Assembly Programs

In addition to the subdivision approval process, lots need to be serviced and available for development in order to meet the expansion requirements of various uses and to implement the policies. A land assembly program is the procedure of changing land from its raw state into fully serviced and developed lots while having the land ownership and funding sources co-ordinated.

In the pre-development stage, geo-technical investigations are often required whereby soil testing and elevation checks are able to identify problems in the proposed subdivision area. Then remedial measures such as landfill, levelling or drainage can be undertaken to correct the site problems. After the lots are surveyed, municipal services can be extended into the area including water and sewer lines, roads, power and telephone. Constructing the water and sewer extensions requires the largest expenditure in the land assembly program.

In previous years, the total cost for developing lots was largely borne by the Department of Northern Saskatchewan. Now, the responsibility lies with the municipality to undertake this process, either by itself or in conjunction with available sources of government funding. Funding sources include Saskatchewan Housing Corporation which offers financial assistance on a reimbursement basis for land assembly programs for residential purposes, and Saskatchewan Economic Development Corporation which provides assistance for industrial park development.

3.5 Council Support

A number of policies, such as those on economic development, state that the Council will "encourage" certain actions, programs or efforts. How does the Council do this? The best strategy will vary with the policy, but there are two basic approaches which are useful.

i) Direct lobbying with senior government through letters, resolutions and meetings may be the most effective means of implementing a policy.

ii) Designating a person or establishing a committee to spearhead a project, investigate funding sources or prepare proposals could be the best way to proceed. Such a person could be a member of the Council or the administration. Alternatively, the Council could employ a community development worker to work towards implementing the proposals of the Basic Planning Statement.

3.6 Other Measures

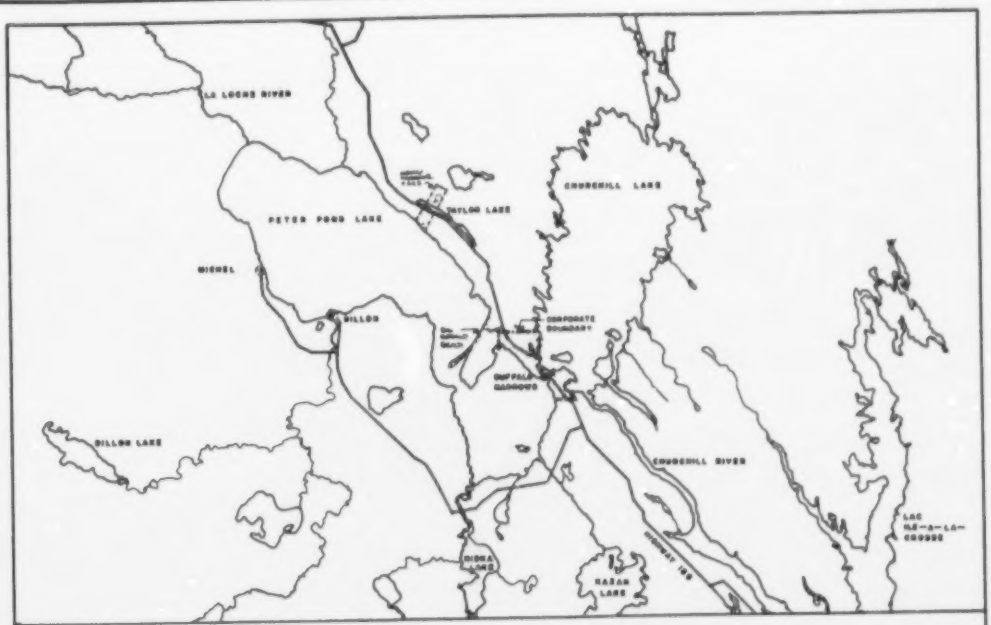
In some situations, it would be suitable to use other municipal bylaws to implement the policy statements. Under the Northern Municipalities Act, the Council is empowered to enact a variety of bylaws in addition to the Zoning Bylaw. Some examples of other bylaws which would relate

to the Basic Planning Statement are a building bylaw, a maintenance and occupancy bylaw and a street and property numbering bylaw.

Other methods are available to Council to implement particular policy statements. For example, the Council may pursue annexation procedures to enlarge corporate boundaries. As well, Council may purchase or lease lands, re-develop a parcel or undertake new initiatives.

APPENDIX A

BUFFALO NARROWS



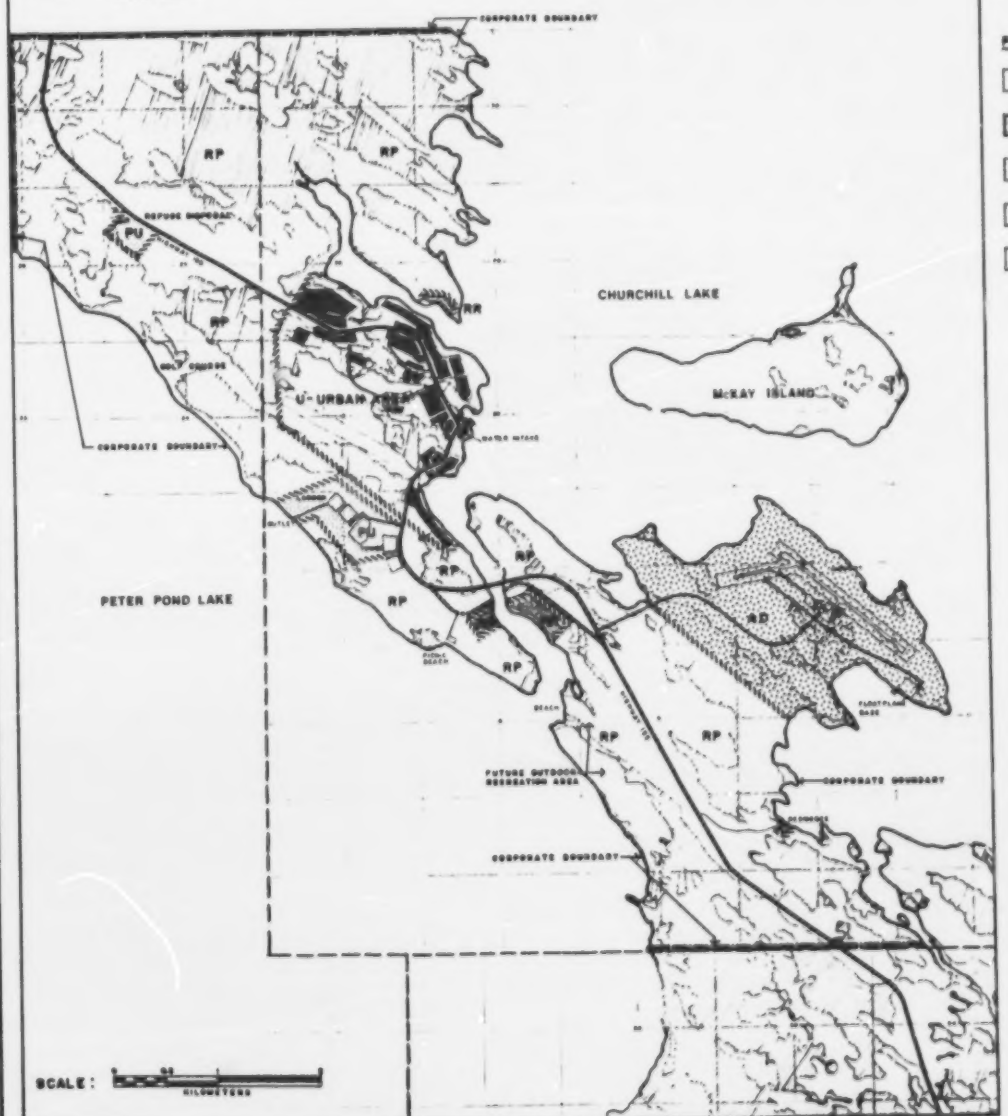
map 2
rural land use

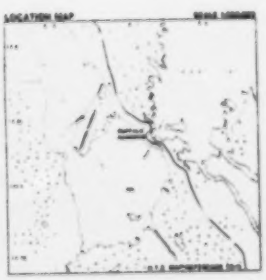
LAND CAPABILITY FOR DEVELOPMENT

- WETLANDS - UNSUITABLE
- UPLANDS - SUITABLE

PROPOSED LAND USE ZONES

- RP RECREATION PARK
- RR RURAL RESIDENTIAL
- AD AIRPORT DISTRICT
- PU PUBLIC UTILITY
- U URBAN AREA





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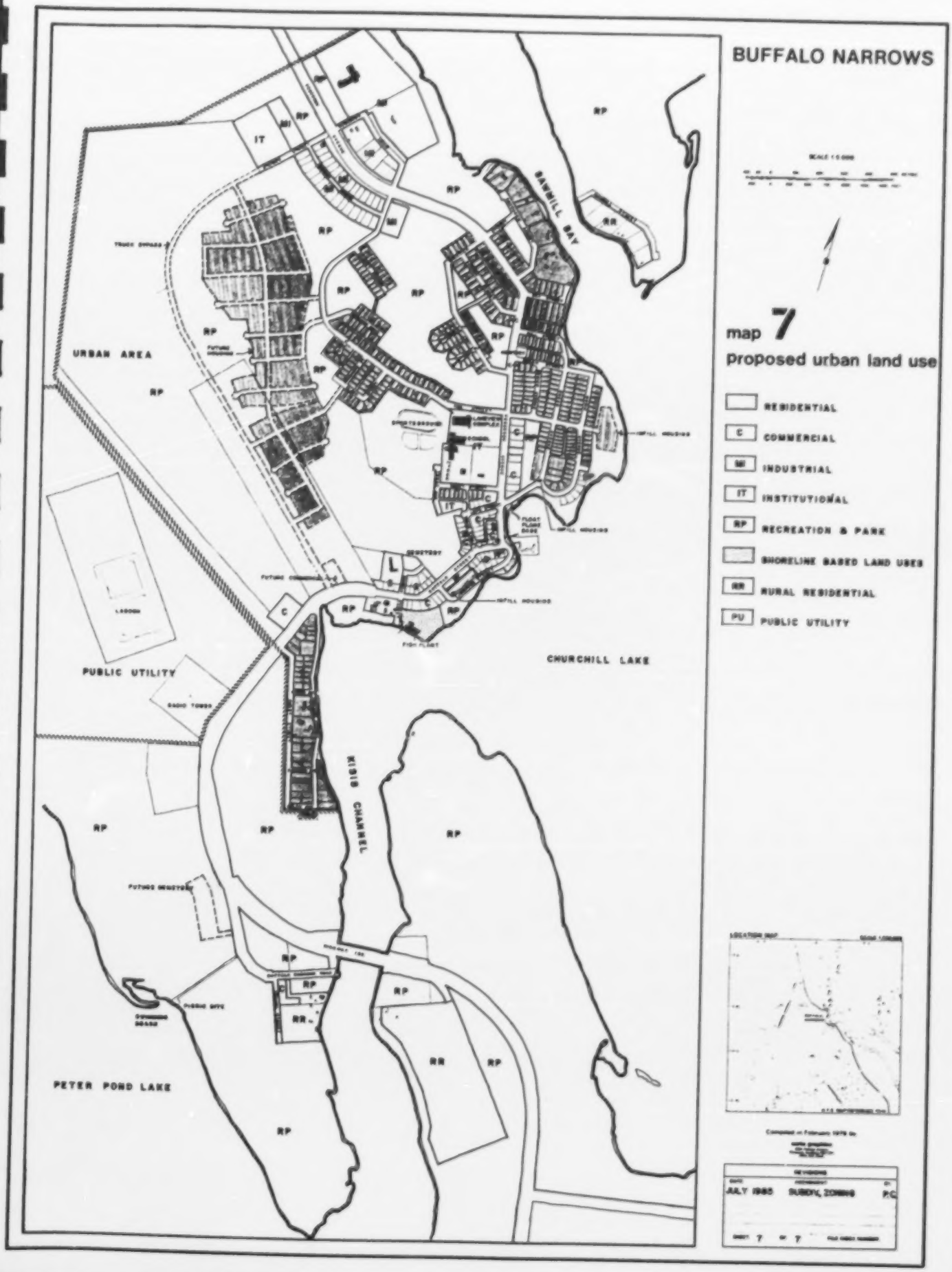
BUFFALO NARROWS
map 7
proposed urban land use
RESIDENTIAL
COMMERCIAL
INDUSTRIAL
INSTITUTIONAL
RECREATION & PARK
SHORELINE BASED LAND USES
RURAL RESIDENTIAL
PUBLIC UTILITY
URBAN AREA
PUBLIC UTILITY
CHURCHILL LAKE
KISIS CHANNEL
PETER POND LAKE
SAWMILL BAY
JULY 1985